Trains

35¢

July, 1947

Illustrated Magazine of American Railroading

GOOD NEWS FOR THE WEST!

141 MILES

of new freight cars and locomotives!

Brand new freight cars of latest design are moving steadily onto Southern Pacific rails. Although it will be some time before deliveries are sufficient to meet present enormous demands, we want you to know that we are doing everything in our power to speed the day when every western shipper will have as many freight cars as he wants, when and where he wants them.

Since the end of the war we have received 4,100 new freight cars and have ordered 12,200 more—a total of 16,300 freight cars of all types (including 5,100 refrigerator cars for Pacific Fruit Express—half-owned by Southern Pacific). We have also ordered 20 huge diesel-electric freight locomotives and 23 diesel-electric switch engines.

Coupled together, these 16,300 cars and 43 locomotives would make a solid train more than 141 miles long!

S·P

The friendly Southern Pacific

Trains

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Trains examines the typical medium-size railroad, using the Monon as an example

Volume 7, Number 9

July 1947

"The sum of 10 billion dollars required to provide 'superrailroads' is but a fraction of the sum that would be necessary to provide superhighways, and airlines of much less capacity and aggregate public utility."
—John W. Barriger, in an article in TRAINS, *December, 1943.*

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Toledo, Peoria & Western Runs Again

Things are peaceful again on the Toledo, Peoria & Western. The bitter 19-month strike which was climaxed by the murder of President George McNear is ended and the employees are working with a new and co-operative management to again earn for the line a profitable interchange traffic.

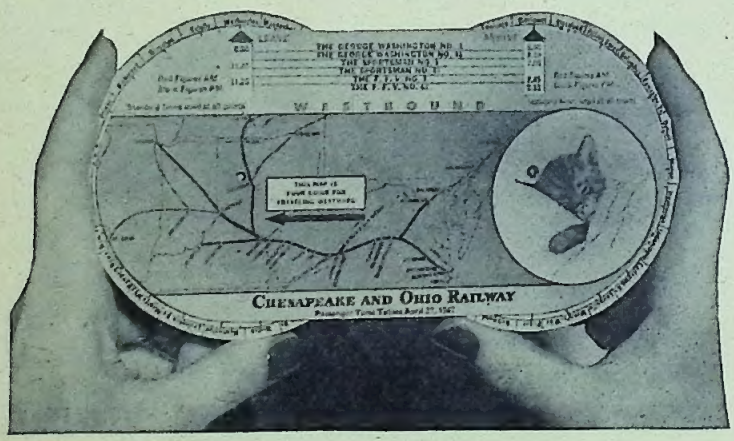
Formal ceremonies at East Peoria Yard started freight train No. 22 on its way recently with forty-two loads and two empties. Two pretty Peoria coeds released a rope, and a block of ice from the railroad icing plant smashed against the coupler of 4-8-4 No. 82. The engineer whistled "off brakes" with evident joy, and the TP&W was railroading once more.

New President Russell Coulter, formerly chief traffic officer of the Frisco, is soft spoken and persuasive, whereas McNear was bluff and blustery. McNear tried to enforce his own brand of efficiency with working rules far different from those generally used. Coulter is getting efficiency under standard working rules by co-operation and friendliness. The men know that there will be more jobs as fast as the road regains its traffic, and they are doing all they can to give good service.

Right now the road is hauling only about 50 per cent of its old normal traffic. This is the measure of Coulter's task. And he must fill in the other 50 per cent with a brand-new traffic department. The enginemen and the trainmen came back when the strike was over. Their seniority ties them close to the road. But the traffic men and some of the executives have left.

The TP&W has 239 miles of east-west main line, centering on Peoria. It connects with many major railroads east and west of Peoria, and forms a link in through routings which bypass the Chicago area. When McNear bought the line in 1927 its traffic was small — 46 per cent from on-line shippers — and it was losing money fast. By aggressive traffic salesmanship McNear increased the interchange business to three-quarters of the total, and soon the road was making money as fast as it had been losing it. But McNear also brought to the road a highly personal brand of management which caused several violent strikes and, eventually, the government operation of the road during the recent war.

The end of the McNear era came late last winter when he was shot from ambush near his Peoria home. The management passed to trustees for the McNear estate, and it wasn't long before the rust was polished from TP&W railheads.



Train travel innovation of the month is Chesapeake & Ohio's disc timetable. One side of the timetable is westbound, the other side eastbound. Discs have station names printed around edges. Left disc is set to station from which you leave, right disc to your destination. Leaving and arriving times stand out alone in slots.

GM&O-Alton Merger Completed

A new 3000-mile railroad system extending from Chicago to the Gulf of Mexico was created June 1 when the Alton Railroad was officially merged with the Gulf, Mobile & Ohio. At the same time, through sleeper service was begun between Chicago and Mobile, Ala. The GM&O now gives direct service between Chicago, Kansas City, St. Louis, Birmingham, Montgomery, New Orleans and Mobile.

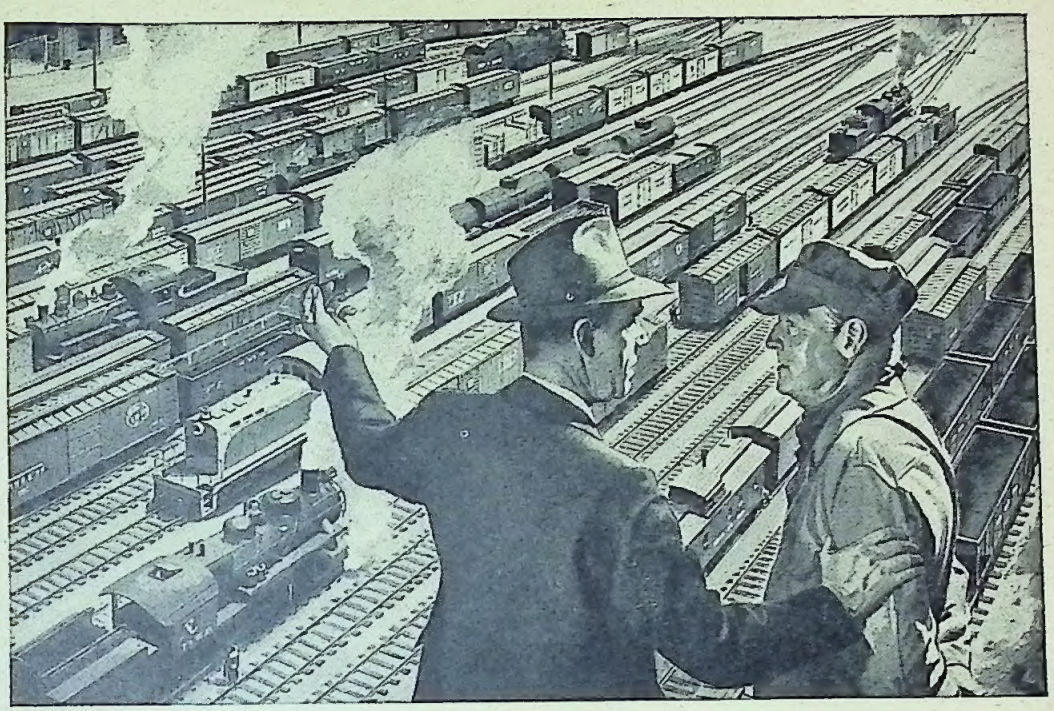
The system is headed by personable I. B. (Ike) Tigrett, who assumed presidency of the 408-mile gulf, Mobile & Northern in 1920 as a pinch-hitter until "a competent person for the position" could be found. By absorbing six other railroads, of which the Alton is the latest, Tigrett built up the mileage of the road while other lines were abandoning trackage.

Before becoming president of the GM&N, Tigrett had been head of the 49-mile Birmingham & Northwestern, a position he acquired at the age of 33. This made him the youngest railroad president in the United States. Now nearing 68, he has been a railroad president longer (35 years) than any other Class 1 president in the country.

Virginian Opposes NYC-C&O Combine

Contending that an alliance between the Chesapeake & Ohio and New York Central would deprive the Virginian Railway of its only western outlet, the latter road asked and received authority from the I. C. C. to become a party to the proceeding in which C&O officials ask permission to become directors of the NYC. The C&O men, Chairman Robert R. Young and President Robert J. Bowman, seek berths on the NYC directorship, with the view of eventually consolidating the two roads.

The Virginian's only friendly western connection is with the New York Central at Deepwater, W. Va. Its only other western connections are with C&O and Norfolk & Western, both of which are competitors of the Virginian. The Virginian has enjoyed substantial interchange with NYC since connections were established by means of a bridge over the Kanawha River in 1931. It fears that if the C&O-NYC alliance is authorized by the I. C. C., much Virginian



"With all this business— why aren't railroads making more money?"

Railroads are busy these days—as busy as they were during the war.

They are hauling more freight than ever before in peacetime—a volume of traffic equivalent to moving a million tons a mile every minute.

With all this traffic, it's no wonder some people think railroads are making lots of money.

But they are not. In 1946, they made only 2¾% on their net investment in the cars and engines, the tracks and terminals, the shops and signal systems, and all the other things which railroads have to provide and maintain in order to serve you. And this year, even with the new freight rates which went into effect January 1, 1947, they won't make much, if any, more.

Why?

Simply because the cost of producing rail transportation has gone up so much faster and farther than the price at which it is sold.

The average cost of materials, supplies, and fuel is up more than 60% since 1939.

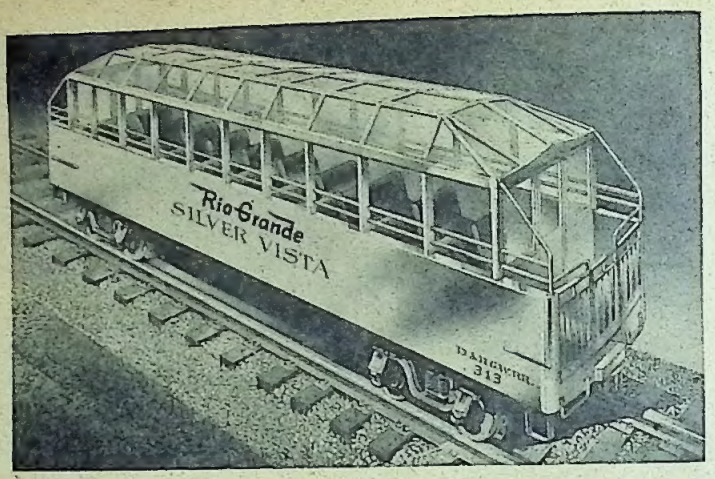
Wages are up more than 50%.

But the average revenue which the railroads receive for hauling a ton of freight one mile is less than 15% higher now than it was in 1939, before the war. And it's nearly 20% *lower* than it was in 1921.

The result is that—even if the record-breaking peacetime traffic continues—the railroads in 1947 will earn only about 3%. That's only half of the 6% which nine people out of ten think would be no more than a fair profit—and which is necessary if railroads are to keep on investing in the better plant and equipment which will mean better service to you. *Association of American Railroads, Washington 6, D. C.*

AMERICAN RAILROADS

THE NATION'S BASIC TRANSPORTATION



Denver & Rio Grande Western is plugging tourist travel on its narrow gauge lines with this Silver Vista car. It runs from Durango, Colo., over Cumbres Pass every Sunday to Alamosa, then back to Durango on Monday. On Tuesday, Thursday and Saturday it runs to Silverton through the beautiful River of Lost Souls canyon.

traffic will be diverted to C&O.

The city of Norfolk, joining the Virginian in its opposition to the alliance, suggests an affiliation of NYC with the Virginian, instead of C&O. The municipality points out that the I. C. C., when it outlined a four-system plan for the East in 1932, assigned the Virginian to the NYC with the statement that "the route via Deepwater and the New York Central thus firmly established should be continued in its full vigor."

Nickel Plate, it is contended, would be another loser, for if the NYC-C&O affiliation were allowed, the C&O would have to give up its holdings in Nickel Plate. Then, that road would find itself in a position similar to the Virginian.

Opponents contend that such a reshuffling of traffic could result from a working agreement between C&O and NYC, that it might end in a regrouping of all the roads in the eastern territory, perhaps to the extent that only two huge systems would remain.

Eastern Fare Increase

The 10 per cent passenger fare increase which went into effect for 60 eastern railroads in June is expected to boost annual revenues of the roads by about $40 million, thus partially offsetting higher operating costs, despite a decline in traffic from the war peak. Pennsylvania and New York Central will claim more than half the estimated increase — $14.5 million for PRR, and $10 million for NYC.

Pere Marquette Now C&O

The Pere Marquette has ceased to exist as such. Effective June 6, it became an integral part of the Chesapeake & Ohio, making that system the seventh largest railroad in the country in point of operating revenues. C&O now has 5000 miles of mainline track extending from the Eastern Seaboard to the lower Michigan peninsula, and through Detroit to St. Thomas, Ont., with trackage rights from St. Thomas to Buffalo.

End-to-end unification of the lines was a natural. C&O has controlled Pere Marquette since 1929. Together, the C&O and PM joined the great coal-producing areas of West Virginia and Kentucky with the coal-consuming industrial areas of Michigan. Tracks of the two roads connected at Toledo, O., and La Crosse, Ind. Consolidation into one railroad offers opportunity for economies and improvement of service.

For operating purposes, lines north of Toledo and La Crosse will be designated the Pere Marquette District, while lines south will be perpetuated publicly by District. The Pere Marquette name will be perpetuated publicly by retention of that name for the Grand Rapids-Detroit streamliners.

Consolidation was ratified early last year by the directors of the two roads, but a small percentage of stockholders opposed the merger. The Federal District Court of Alexandria, Va., decided against the minority group. Officers of the enlarged C&O will be the same as before, since they held the same positions on the Pere Marquette.

Two-Footer Runs Again

Open for free public enjoyment on weekends is Ellis D. Atwood's Edaville Railroad — the reincarnation of Maine's two-foot gauge Bridgton & Harrison, Sandy River & Rangeley Lakes, and Wiscasset, Waterville & Farmington. The "Cranberry Belt System," which is located on Atwood's cranberry ranch at South Carver, Mass., will have four steam locomotives when the rebuilding program is completed, besides the sleeper *Rangeley*, several coaches, freight cars, and cabooses. The six-mile line was opened April 7.

Pere Marquettes Up Business

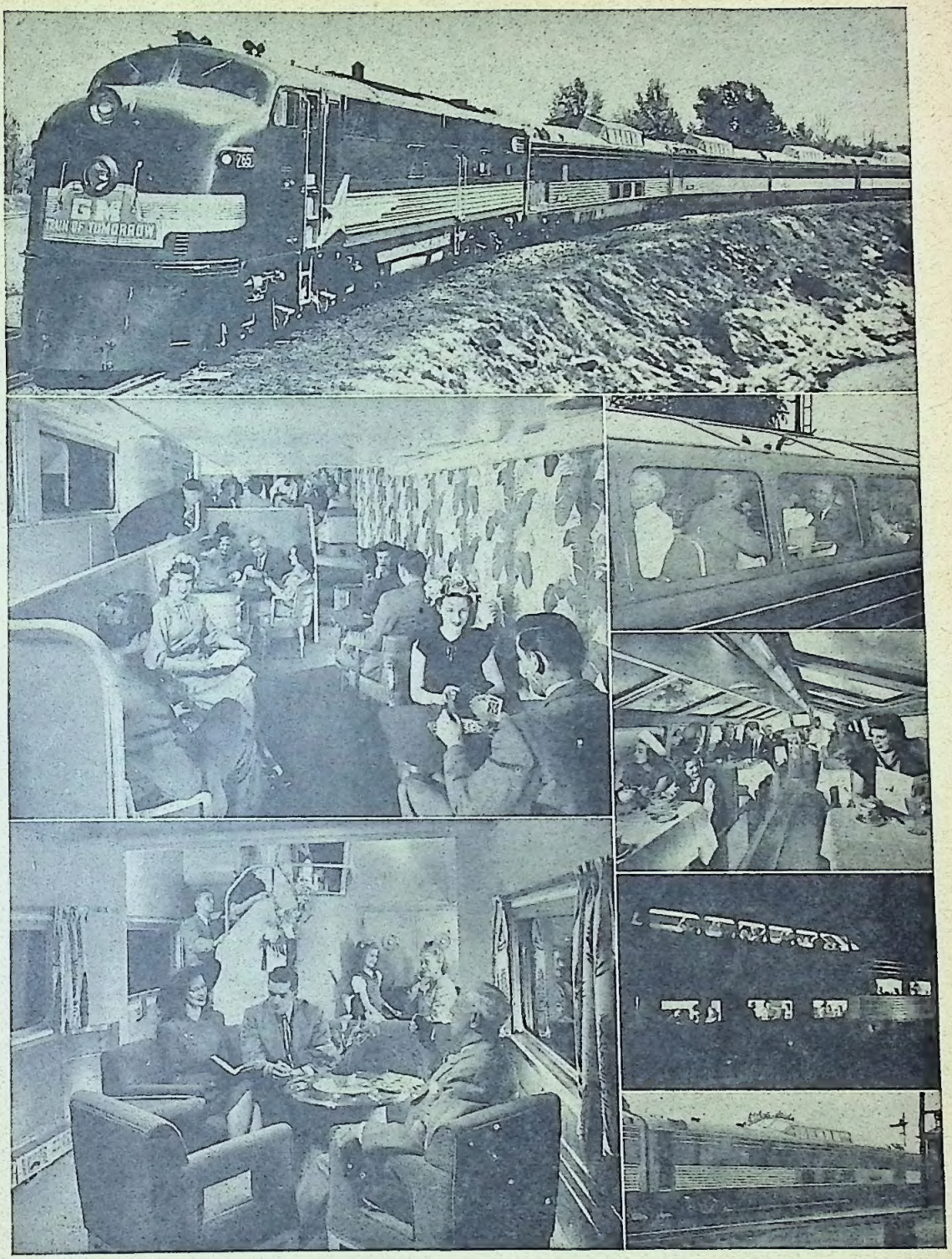
Pere Marquette's twin streamliners, *Pere Marquettes*, have increased passenger travel on the Grand Rapids-Detroit run 86 per cent in the first seven and one-half months of operation, and the increased business will pay for the trains in less than four years, President Robert J. Bowman announces. Revenue from the all-coach streamliners is 80 per cent above the revenue from the steam trains they replaced, despite the fact that the old trains carried parlor cars on which first-class fares were charged. Besides comfortable, fast riding in luxurious surroundings, the *Pere Marquettes* offer pay-on-train service, and tipping is discouraged, even though the pretty dining car waitresses serve a free after-dinner cigarette of the diner's choice, and then light it for him.

FEC-ACL Merger Approved

The Interstate Commerce Commission has approved consolidation of the FEC with the Atlantic Coast Line, reversing a former decision which would have placed control of the reorganized Florida East Coast with the St. Joe Paper Company. Value of the FEC was placed at $40.5 million. It has 685 route miles, ACL 4935 miles.

Another Travel Service

Robert R. Young's Chesapeake & Ohio has inaugurated a hotel reservation service for the convenience of its passengers. Without extra cost, the traveler can now telephone his local C&O passenger



The General Motors Train of Tomorrow, now on exhibit in the southeastern part of the country, is not just another modern train. It is a whole trainload of new travel sensations. The variety of seating and rooms keeps one from getting bored even on a long trip. The observation domes let the scenic minded passenger ride up above the level of shrubs and fences where he can get the best possible view in all directions. One can even dine upstairs. Meals are brought up from the kitchen in a dumb waiter. The observation car (see diagram) has a dome, downstairs bar, and conventional observation lounge.

agent, stating what kind of accommodations he wants, what he wants to pay, when he wants the rooms, and for how long. C&O of course, cannot guarantee that rooms will always be available, but experienced personnel make every effort to secure the reservations. If requests for hotel space are made several days in advance of the trip, the passenger agents confirm the reservations before the passengers board their trains. Short-notice requests are telegraphed ahead — free — and passengers are notified en route where they will sleep that night. Texas & Pacific offers a similar service.

N. Y. Yanks Dislike Planes

The New York Yankees, after a side-slip landing at Chicago, and a bumpy airplane ride to Boston, held a protest meeting and told President Larry MacPhail that in the future they want to go by train. MacPhail concurred, and the ball players are happy.

Automatic Mars Lights

An improvement in the Mars light as a safety device, causes the red figure-8 searchlight to be turned on automatically when pressure in the train air line drops, either because of sudden braking, or a parting of the line. Mars lights have been used for some time by many railroads, white on the locomotive, and red at the rear of the train, but control has been manual. New models of Mars headlights for locomotives are white, but can be changed to red by the engineer when the occasion arises. Among trains equipped with the automatic lights are the "400" streamliners of the Chicago & North Western.

Northern Pacific Taxes

Northern Pacific recently printed advertisements showing what happens to the local taxes it pays. Nearly half of the payments go to support schools. Nearly one-quarter of the payments support county judicial, administrative, health and protective services, while some 14 per cent goes to city and town government. The rest, 13.15 per cent, builds new roads and bridges for the buses and trucks which compete with the railroad! In contrast, many states earmark automobile and gas taxes for highway purposes only.

Foreign Notes

Electrification of 1300 more miles of line by 1955, is the plan of the French National Railroads, which today operate 2207 miles by electricity, about 9 per cent of the total system. Twenty per cent of total traffic is handled by 770 electric locomotives and 330 autorails, saving an estimated 1.2 million metric tons of coal per year. When it is completed the Génissiat Dam, second largest in Europe, will furnish power for some of the proposed electrified lines.

Direct Paris-London daily service, via Dieppe and Newhaven, has been re-established with a 10-hour daytime schedule. A thrice-a-week Paris-London service is also run via Le Havre and Southampton. . . . *L'Oiseau Bleu* again runs between Paris and Brussels, Belgium, on a four-hour schedule. Between Paris and Liége a new autorail service enables a resident of Liége to make a daytime round trip with five free hours in Paris. . . . Increasing passenger traffic between Paris and Copenhagen has resulted in a new express train in addition to the *Nord Express*. The trip takes 55¼ hours. . . . Paris-Vienna travelers are now served by a through car. A through car has also been added to the *Arlberg Express* for Paris-Belgrade passengers.

The *Simplon-Orient Express* is once more running all the way from Paris to Istanbul on the shore of the Marmora Sea, giving through service three times a week. . . . Paris-to-Germany and Paris-to-Italy services have been improved. . . . Amsterdam, Holland, now straddles two direct inter-European rail services, one to Switzerland and the other to Austria. . . . All prewar London & North Eastern services are running again, although not as frequently as before.

They really "pack them in," in Stockholm. The city street railway is now using cars with a seating capacity of 104, plus a standing capacity of 70. Six doors are used.

Participating in the commemoration of the 75th anniversary of Japanese railway service, the third Military Railway Service displayed in Tokyo more than 200 photographs, 50 posters and 150 pamphlets about United States railroads. Then the exhibit was broken up into three mobile units for rotation throughout Japan for the benefit of occupation forces.

N&W Line Relocation

Contracts have been let for the relocation of Norfolk & Western's main line between Lick Branch and Cooper, W. Va. The project, to cost about $12 million, includes building 5.17 miles of new line, and a new 7050-foot double-track tunnel, as well as the erection of a steel bridge, and reconstruction of another. When the grade-easing and curve-straightening job is completed three years hence, historic Elkhorn Tunnel [page 9, April TRAINS] will be abandoned. The new line will be operated by centralized traffic control.

B&O Enlarges Coal Yard

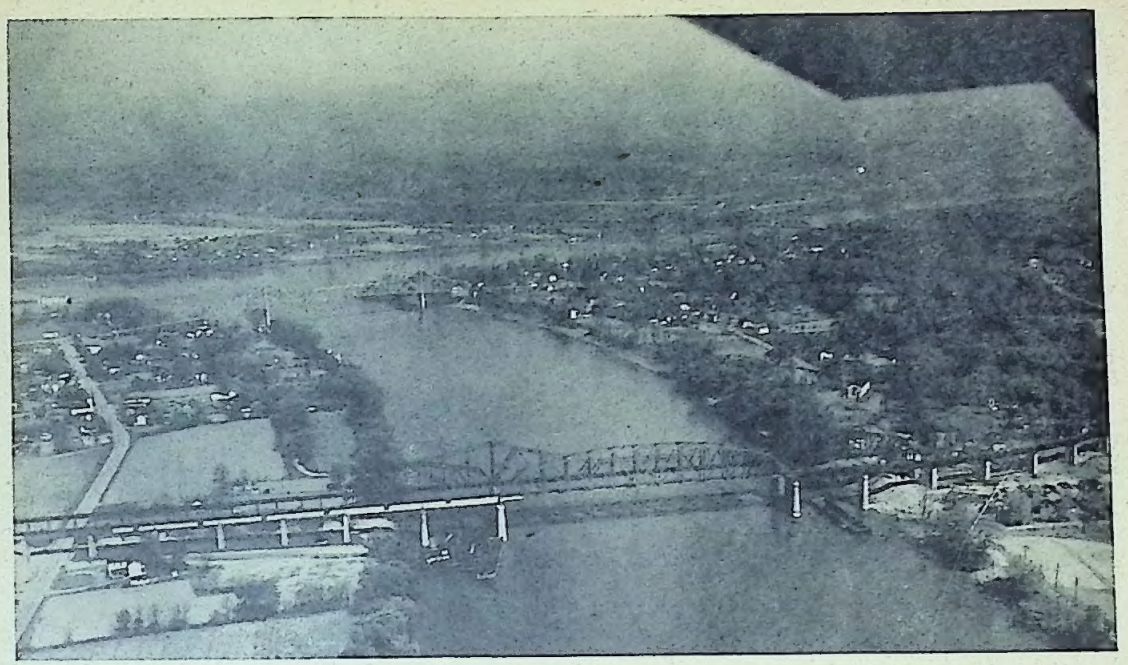
Coal, vital to the restoration of European industries, is moving through the Port of Baltimore in such quantities that the Baltimore & Ohio is now expanding the capacity of its Curtis Bay coal pier from the present 400 cars to 1005 cars. More than half a million ton of coal per month moves over the pier, bound for Italy, Holland, France, Ireland, Denmark, Norway, Sweden, Brazil, and Africa. Thirty-seven different types of coal are handled at the pier, and the increased capacity of the yard will aid materially in classifying the shipments.

Railroad Movies

The first of a series of films made especially for sale to railfans is announced by Fred McLeod, 1068 Fifth Street, Oakmont, Pa. It is a sequence of heavy action on Pennsylvania's famous Horseshoe Curve, available in 8 mm. or 16 mm. and in color or black and white at prices ranging from $11.50 to $15.75 postpaid. . . . Pennsylvania Railroad has completed a documentary motion picture telling the story of the men who run the trains and of railroad transportation in general. *Clear Track Ahead* runs approximately 25 minutes in its 16 mm. form and is available without charge for showings to schools, churches, clubs, and other organizations through G. E. Payne, System Publicity Representative, Pennsylvania Railroad, Philadelphia 4, Pa.

Locomotive Notes

Export of diesel locomotives on a large scale within the next two years was predicted by American Locomotive Company after receipt



The largest bridge to be built along Baltimore & Ohio lines in a quarter of a century is the new half-mile Great Kanawha River bridge at Point Pleasant, W. Va., near the junction of the Ohio River. It replaces a lighter 60-year-old bridge and makes possible improved service over the Ohio River Division route between Pittsburgh and the Huntington-Kenova area.

of an order for twelve 1500-horsepower units from the Central Railroad of Brazil. Inquiries for the purchase of several hundred diesels have been received from more than a dozen foreign countries, Alco announced. . . . Frisco has ordered thirty-six 1500-horsepower freight units and four 1000-horsepower switching units from Electro-Motive, and six 1000-horsepower switchers from Fairbanks-Morse. The 46 units will cost about $5.7 million. . . . Jersey Central will buy three more 2000-horsepower Baldwin diesels to increase its suburban diesel fleet to six.

Union Pacific expects complete dieselization of its operations between Salt Lake City and Los Angeles by the end of the year. Of the 166 units on order for 1947 delivery, 18 were received in June. Electro-Motive, Fairbanks-Morse and Alco are filling the big order. . . . Milwaukee Road has ordered for 1947 delivery five 1000-horsepower switchers, four 2000-horsepower passenger locomotives, and two 1000-horsepower motor cars — all diesels. . . . Upon completion of its diesel program, the Lackawanna will have five passenger and 14 freight diesels in road service, besides the 41 switchers now in use.

Jersey City Diesel Shop Not to Be Built

Central Railroad of New Jersey has cancelled its plans to build a $1.8 million diesel repair shop at Jersey City, due to increased construction costs, coupled with the fact that expected relief from high property taxes did not materialize. The land on which the shop was to be built will be put up for sale and additions to diesel repair shops will be made at other points.

Equipment Notes

Soo Line has modernized 10 coaches with reclining seats, wide baggage racks, new paint scheme, and other improvements. At a cost of $8000 per car passengers get nearly all the benefits of new equipment which costs 10 times as much. On roads of light passenger traffic where brand-new coaches would not pay out, such modernization should become popular. Modern reclining seats probably matter much more to the customer than any other single feature of the new coaches, and they could be installed in many structurally sound existing cars. . . . The A. A. R. has extended through 1948 the tests it is conducting on refrigerator car improvements. . . . C&O has ordered 3000 70-ton hopper cars from American Car & Foundry after competitive bidding based on the builders' specifications. They will have friction bearings since much of the mileage will be in off-line service.

The Birmingham plant of Pullman-Standard is now turning out freight cars at the rate of 50 or more daily. This is three times as many as in 1946, and coupled with the recent doubling of production at the company's Michigan City, Ind., plant should do much to lick the freight car shortage. Improved steel deliveries have made the increases possible. . . . April deliveries of freight cars were 50 per cent above March, according to the American Railway Car Institute. The backlog of domestic freight cars on order as of May 1 was 102,085. . . . Two experimental 40-ton refrigerator cars are testing the use of aluminum to reduce weight. They weigh 3½ to 6 tons less than similar cars of conventional construction. . . . C&NW and its affiliated CStPM&O have ordered 1400 50-ton steel box cars from A. C. F.

Southern Pacific now has 4000 new freight cars in service, and

several hundred new refrigerator cars for Pacific Fruit Express, jointly owned with UP, are now coming west to SP rails. By midsummer these new PFE reefers will be arriving at a rate of more than 1000 a month. Total refrigerator car order is 5000 cars. Many of these cars go from Eastern builders to Milwaukee for westbound beer loadings, and are delivered to SP carrying revenue freight. . . . Milwaukee Road has ordered 750 auto cars, 1600 box cars, 400 gondolas and 125 passenger train cars from the company's shops. The 125 passenger cars are in addition to the new *Olympian-Hiawatha* which went into service June 29.

The Bay Area Electric Railfans of California has purchased a gas-electric car formerly used on the abandoned Nevada Copper Belt Railway. The car was originally used on the now abandoned Salt Lake & Utah before that road was electrified. Now it will be stored in the Virginia & Truckee engine house at Carson City, Nev. . . . New York subway riders will be riding in 200 new cars by 1948. Motor and control systems will allow faster schedules. The motors will be spring hung for smoother operation, and dynamic braking will stop the cars more quickly and smoothly.

Rapid Transit for Cleveland

The Cleveland Transit Board has voted $22 million to build a rapid transit line and modernize the surface transportation system. Plans call for a high-speed rail line from the Public Square west to Lakewood and southwest Cleveland, and a limited rail operation to Cleveland Heights and East Cleveland. The line to the west is expected to make Edgewater Park on the shore of Lake Erie the most important park in the city.

Electric Railways

Interurban lines from Milwaukee to Waukesha and Hales Corners changed hands recently for the second time in four months and are now owned by Greyhound. Previous owner was Kenosha Motor Coach Lines. The lines carry heavy suburban traffic and abandonment by the bus company would be difficult. . . . The District of Columbia Public Utilities Commission has refused permission to change the Benning street car line to buses and instead has ordered rehabilitation of the trackage. . . . Electric lines in Melbourne, Australia, are being extended.

National City Lines, which has made quite a business of buying street car systems and converting them to bus, has been indicted on Federal anti-trust charges. Basis of the charges was the control of National City Lines by Standard Oil of California, Federal Engineering, Phillips Petroleum, General Motors, Firestone Tire & Rubber, and Mack Bus. . . . Pittsburg County Railway (Oklahoma) has abandoned all electric railway service. . . . The safety and reliability of electric railway service are stressed in a series of advertisements which West Penn Railways is running in communities it serves in the Pittsburgh suburban area. The ads tell details of electric railway maintenance work and tie good maintenance to the rider-advantages of using the electric.

Railfan Trips

[Notices must be received by the 10th of the month preceding date of issue.]

July 4-6: Montreal and vicinity. Starts at St. Lambert, connecting with *Montrealer* July 4. Visits to M&SC interurban, to Angus and to Point St. Charles shops. Special train July 6 from Windsor station on CP and CN, stopping at yards and engine houses. Side trip July 5 to Cornwall street railway. Gondola car will be carried on this and the July 6 trip. Fares, Montreal and vicinity, July 4 and 6, $5.75 in advance; Cornwall side trip including round trip from Montreal, July 5, $4.25 in advance. Joint Railfan Trip Committee, Lackawanna Terminal, Hoboken, N. J.

July 12: CNR and L&PS from Toronto to MC shops at St. Thomas and to Port Stanley. J. R. Oakley, Upper Canada Railway Society, 147 Brookdale Avenue, Toronto, Canada.

July 13: Trip through Santa Fe shops at Topeka, Kan., leaving Santa Fe station at Oklahoma City on the *Chicagoan*, 6:45 a. m., arriving back at Oklahoma City at 12:30 a. m. July 14. C. A. Emry, 1720 N. W. 30th Street, Oklahoma City, Okla.

July 13: Lehigh Valley Transit city lines in Allentown, Bethlehem, Northampton, Hellertown (and if enough cash reservations are received, Easton as well). Starts at 10:30 a. m. (E. S. T.) at Broad and New streets, Bethlehem, Pa., connecting with all trains to Bethlehem from east, west and south. $2.50 in advance; includes Easton side trip if it is run. Joint Railfan Trip Committee, Lackawanna Terminal, Hoboken, N. J.

July 14: National Railway Historical Society inspection trip over Monongahela & West Penn Railway. Also July 14, open car trip in New Haven. Details from Howard E. Johnston, 78 Sandford Avenue, Plainfield, N. J.

July 17: At midnight the New York Subway will dismantle the Times Square-Grand Central shuttle service platform in Times Square station (3rd Street entrance) to allow removal of the shuttle trains for maintenance. This "dismantling of the world's busiest station to get a train out" has been a periodic performance for the past 30 years. The Joint Railfan Trip Committee, Lackawanna Terminal, Hoboken, N. J., has arranged a photographing party for the event, followed by a trip on the released train to the far corner of the system. By reservation only; 10 cents to the committee plus 5 cents in the turnstile.

July 20: Altoona and Johnstown trolley lines. Starts at 6 a. m. daylight saving time at Walnut and Washington streets, Johnstown, Pa., after arrival of PRR trains 14, 35 and 37. Following tour of Johnstown, party will go to Altoona on PRR regular train and ride all but a few blocks of the ancient Altoona system. $2.50 in advance, not including PRR fare. Buy PRR tickets through to Altoona from the west, and to Johnstown from the east. Joint Railfan Trip Committee, Lackawanna Terminal, Hoboken, N. J.

July 20: Fallbrook Branch, NYC. Buffalo through Lyons and Corning to Pine Gorge and return. Buffalo Chapter, N. R. H. S.; Edward Levandoski, 18 Kopernik Street, Buffalo 6, N. Y.

July 21: N. R. H. S. inspection trip over Dunkirk, Alleghany Valley & Pittsburgh branch, NYC. Details from Howard E. Johnston, 78 Sandford Avenue, Plainfield, N. J.

August 3: Valley branch excursion, New York, New Haven & Hartford Railroad. Starts at New Haven, Conn., at 9:15 a. m., daylight saving time; 77 miles to Hartford via Hartford-Saybrook line, and return. Fare, $4.25; children under 12, $2.15. Make reservations with Edward G. Kelly, Connecticut Valley Chapter, N. R. H. S., 411 Shelton Avenue, New Haven 11, Conn., before July 30. No tickets sold on day of trip.

August 10: Pennsylvania Railroad, New York Division and the following branches: Center Street, National Docks Railway, Millstone, South Trenton, Harsimus Grove, Greenville, Rocky Hill, Bordentown, Waldo Avenue, Bonhamtown, Millham, Camden & Amboy east of Bordentown. Photo stops at Waldo Avenue yard, East Trenton engine house, and Bordentown wye. Starts 9 a. m., daylight saving time, at Coal Street crossing, near River Street freight station (1 block northeast of PRR station), Newark, N. J. Last connection is the *Washingtonian* from New England. $5.50 before August 4. Joint Railfan Trip Committee, Lackawanna Terminal, Hoboken, N. J.

August 24: Trip over Reading Company electric lines, sponsored by Quaker Division, Electric Railroaders' Association. Plenty of picture stops; car shop and power dispatcher are included. Details from Edward P. Haines, 110 E. Durham Street, Mount Airy, Philadelphia 19, Pa.

What's Become of—

Most early streamliners attracted more business than they could handle, and thus were sold or moved to other runs. This is true of the *Egyptian Zippers*, two light streamlined rail-motor cars which ran on southern Illinois lines of C&EI until they were outgrown in 1942. One of the Zippers now runs on the Louisiana & North West Railroad as trains 6 and 7 between Gibsland, La., and McNeil, Ark. The other, renamed *Chihuahua*, runs as trains 3 and 4 on the Kansas City, Mexico & Orient of Mexico.

Train Timing

Do you have a favorite stretch for timing your favorite train? I'm not much of a train timer myself. About all I do is glance at the timetable now and then on a long trip to see if we're on time. But there is one stretch I almost invariably check with the watch, for perhaps no good reason except habit and that it's a convenient length to time. It's the 10.8 miles between Sturtevant and Ranney on the Chicago-Milwaukee run of the Milwaukee Road. The best time I've caught yet is 5½ minutes, which isn't bad!

A. C. Kalmbach.

Monon's *Day Express* Near Bloomington

With two thirds of its 325-mile run to Louisville behind it, Chicago, Indianapolis & Louisville No. 5 swings into the last lap carrying two head-end cars, a coach, and a lounge car. Daytime passenger traffic is light on the Chicago-Louisville run, but head-end business is good. Steam locomotives such as the 510 are incapable of making up delays resulting from long loading periods at stations, and the *Day Express* is frequently about an hour late into Louisville. Diesel power is expected to keep the train on schedule and eventually to allow faster runs. Photo By J. F. Bennett, 1112 N. College, Bloomington, Ind.

Milwaukee Road Speedliners go transcontinental

Olympian Hiawathas

CHICAGO-PACIFIC NORTHWEST

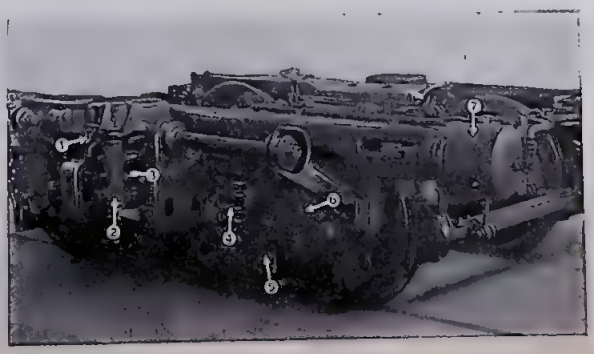
IT'S coming June 29th! A postwar Hiawatha service fashioned for the territory it serves. Here are a few of the highlights:

6,000 hp. opposed-piston diesel-electric locomotives between Minneapolis and the Pacific. 4,000 hp. diesels over the high speed water level track between Chicago and Minneapolis.

New electrically-actuated brake system that gives instantaneous control throughout the train and permits exceptionally smooth deceleration.

New Milwaukee Road-designed trucks with bolster springs and hydraulic shock absorbers placed considerably outside the wheels to reduce sidesway and provide added stability.

1—Lateral shock absorber. 2—Hydraulic shock absorber. 3—Bolster spring. 4—Equalizer spring. 5—Equalizer. 6—Anti-friction bearing. 7—Brake cylinder.



P. A. system concealed in air conditioning ducts permits station announcements, music and entertainment in all cars.

Equipment includes full Tip Top Grill car with restaurant section and cocktail room . . . 40-seat dining car with unusual angle seating . . . improved Hiawatha reclining chair coaches with extra-large lounge rooms.

New Style Touralux sleeping cars have longer and wider berths. These unique cars offer comfort and privacy at intermediate fares. Rooms and berths are available in standard Pullmans with observation-lounge. These Pullmans will be replaced by all-room sleeping cars with Sky Top lounge later in the year.

We have a limited supply of a de luxe brochure in color on the OLYMPIAN HIAWATHAS which will be sent to readers of TRAINS on request. Mention Trains Magazine and ask:

F. N. Hicks, Passenger Traffic Manager
The Milwaukee Road
727 Union Station — Chicago 6, Illinois

THE MILWAUKEE ROAD *The friendly Railroad of the friendly West*

The Smaller Class 1 Railroad

AMERICA'S railroads have been arbitrarily divided into three classes by the Interstate Commerce Commission for purposes of statistical study. Class 1 railroads are those that generally gross more than $1 million annually. These range from the well-known, thoroughly studied, and capably managed Chesapeake & Ohio, Santa Fe, New York Central, or Pennsylvania, down to a great many lines not as thoroughly known to the public and often not nearly so well managed.

By and large, much of the success of our country's productivity and efficient transport hinges not only on the trunk and transcontinental systems, but also upon the lesser Class 1 lines which feed the raw materials from farms and mines to the interchange points with the big systems.

This month Trains is turning its editorial effort to one of the lesser Class 1 lines in an attempt to stimulate further interest in and greater study of our bread-and-butter railroads. We picked the Monon because it is much like many other Class 1 routes. We picked it also because its characteristics are simple and easy to grasp; because we found each of its 2000 employees, whether he be President Barriger or Towerman Tatum, unusually co-operative. It is also an appropriate choice because the Monon this month celebrates the 100th anniversary of the signing of its first charter.

The Monon Is a Guinea Pig

Little Class 1 road is reducing grades, easing curves, and replacing obsolete equipment to prove the railroads can meet competition

BY JOHN W. BARRIGER*

It is our ambition to make a little "superrailroad" out of the Monon. To me, the term "superrailroad" means integrating the best engineering methods and standards of operation into a railway's entire property. Too small a part of the total mileage of any company now embodies these characteristics. Railroads do not presently need to attain trainloads and train speeds and service qualities above present maxima, but they must narrow the spread between their average performance and their best.

Monon's 552 miles of line would constitute no more than a single division of a large system and represents only 0.2 per cent of the railway mileage of the United States. Its annual revenues are an even smaller proportion of the aggregate receipts of the American railroads. It follows that the Monon is small enough to be able to make a few experiments without risking serious consequences should it find itself on the wrong track and have to turn back. However, I am confident that these tests will prove successful and that our experience will be useful to other railroads as well as profitable to ourselves. These circumstances make the Monon America's guinea-pig railroad. We are proud of that distinction.

While every other Class 1 railroad was setting new revenue and traffic peaks during World War II, the Monon only attained levels equal to two-thirds of the best ones of the past. This was the result of Monon's disregard of certain competitive factors which, in the interest of false economy, prevented it from providing facilities and equipment to give competitively attractive service. It was attempting to operate on pre-World War I standards.

When a railroad passes into bankruptcy, its failure is usually written as clearly into service and property condition as in its balance sheet and income account. The purpose of a reorganization is usually to rehabilitate and develop the property as well as to recapitalize the financial structure. Only the latter part of the job, however, was done on the Monon, and on May 1, 1946, the reorganized railroad corporation found itself in possession of a railroad which was as inadequately developed and indifferently maintained as any of its size in the nation.

What appeared to be a handicap at first provided its greatest of opportunities, because it removed all doubts as to the necessity for prompt and complete rehabilitation and modernization. On the first day of this year, Monon did not have a single steam locomotive of adequate capacity and owned only four diesel switchers inherited from the receivership period. By the end of 1947, it will have replaced *all* of the old motive power with new diesel locomotives. We are running a race with some good friends down south to see which will become the first all-dieselized Class 1 railroad. Other railroads got started much earlier but it will take a smaller number of diesel units to fulfill Monon's complete requirements, which will not exceed 75,000 horsepower, representing a total of 35 locomotives with 51 cabs.

Diesel locomotives now cost nearly $100 per horsepower, so fulfilling Monon's needs entailed an investment of more than $7 million. That is not a big sum in comparison to the purchases

*President, Monon Route.

All photos by Linn H. Westcott.

Left to right — page 14, top: Train 23, French Lick Pullman, passing through Bedford Square. A new tie, Nora. Train 93, Guernsey. Center: Train 75, Saltillo. Below, center: Depot and B&O crossing at Mitchell. Emblem for new passenger equipment. President Barriger at Monon. New engine and tender lettering. Loading railway express at Bedford. Bottom: Paoli viaduct and special train. Pusher returning to Bloomington. This page, upper: Bridges over Fall Creek Parkway and Fall Creek in Indianapolis; stone pile, Bedford. Right: Grain elevator at Bainbridge. Lower: Crawfordsville.

of large railroads, but it represented rather a formidable investment for a small railroad which was then averaging less than $1 million per month gross revenues. However, our courage was fortified by realization that our old steam power was costing 65 cents a mile to maintain and burning 45 cents worth of coal per service mile. The railways of the United States spend the equivalent of their steam locomotive investments every four years in repairing this type of power. Diesels pay handsome returns on the investment required to procure them, and one diesel horsepower will on the average substitute for 2.4 horsepower of steam locomotive capacity.

The president of the American Locomotive Company said in a recent speech, and statistics of locomotive purchases in the United States indicate, that the trend is 95 per cent toward diesels. Eloquent testimony of this is found in two of the largest coal-hauling railroads, one in the East and the other in the West, both placing diesel locomotive orders of great magnitude within recent weeks.

It is admittedly serious to have the technological progress of the locomotive detached from the traffic base — coal — of the railway industry, but that is what has occurred and it remains for the perfection of the coal-burning gas turbine to heal this breach. Meanwhile, we can only hope that the coal mining industry will obtain collateral benefits from the lower railway operating costs and faster train and yard service which the diesels will provide, and thereby through them regain commercial tonnage to offset the loss of fuel.

On May 1 of last year, the Monon had a reported ownership of 3000 freight cars, but its yard tracks were so clogged with bad order cars of its ownership that yard switching was seriously impeded. A careful inspection lead to earmarking 1286 freight cars for immediate demolition as unfit for repairs. This reduced our ownership to 1700 cars, which we will augment by 1125 new ones. Seven hundred are now on order. Contracts for the balance will be placed soon. In each of the next two succeeding years, Monon will probably be in the market for 500 additional freight cars. Over the past year, 500 units of its current ownership have been given heavy repairs, and several hundred more are scheduled for rebuilding this year. We are proceeding rapidly to equip all of the older Monon freight cars with AB brakes where the prospective service life justifies this improvement.

There was little passenger equipment on the Monon that had not been in service at the time of World War I, and there have been many advances in passenger car design since then. Many of its passenger cars were built around 1904 and 1906. They had been steel-sheathed to look like modern cars on the outside, but they were far from modern. We didn't want to haul passengers at high speed in them and were in quite a dilemma. If we bought modern lightweight cars we could not get delivery until 1948, and meantime we would be running old cars.

All that time we would lack the modern advantages of new equipment and be handicapped in the development of passenger traffic. We wracked our brains to decide how to get new equipment in adequate quantities fast and at prices within the limits of our budget. The U. S. Army hospital cars built in 1944-45 solved the problem. Those are identical in all respects to the cars which the American Car & Foundry Company has just built for the L&N's *Georgian* and *Humming Bird*, having the same floor plan and window spacing, and their basic dimensions are virtually identical. In general appearance they look like a modern sleeping car. The car body is made out of carbon instead of Corten or other low-alloy steel, and trucks have six instead of four wheels. We have taken 28 of those cars, all of which were air-conditioned and some of which had been used very little, and with the help of Raymond Loewy, the internationally known designer, have converted them into modern passenger train cars: coaches, parlor, and dining lounge. The original cars cost us only $16,500 apiece and in finished condition will represent an investment of $35,000 to $40,000. Thus, for quite a reasonable expenditure, we modernized our passenger service quickly.

We found we had very obsolete and inadequate communication facilities. It is necessary for a modern railroad to have good telephone and telegraph facilities all along the line. We had nine railway grade crossings where there was no interlocking protection, but these facilities are being installed as rapidly as possible. We had some unsatisfactory bridge conditions. We will replace some of them in the interests of greater economy of operation and maintenance, greater speed, and greater safety. Our main lines have automatic block signals.

We have 512 miles of railroad that we own ourselves and 40 miles of trackage rights. Of the former, a little over 400 miles were laid with rail below the 112-pound section which we think is required. I would like to see that replaced at the rate of 100 miles a year, so that by the end of 1950 all Monon main tracks are laid with 112-pound or heavier.

The greatest single railway problem is not truck or water competition or even wages or taxes or freight rates, but grades and curves. Grades and curves are the principal handicaps to the operation of trains on a speed and cost basis which would make the railroads immune to competitive transportation. They are, I think, the fundamental points of attack in solving the railway problem.

The railroads must rebuild their main lines so that they will impose no handicap to the carrying capacity and the speed of trains. We know that deep water has some important inherent transportation advantages as evidenced by shipping on the Great Lakes, the principal one being that it provides a level surface. Its fluid characteristic is a handicap because at useful speeds the rolling resistance of steel wheels on steel rails is less than hydraulic resistance. Three pounds of drawbar pull will move a ton of train weight on level track. This is less than the force required to move a boat, so the railroad has the advantage on the level; but land transportation is mostly over inclined roads and tracks, not on level ones, and it takes much more power to *lift* a ton than it does to pull it. Nine feet of lift is equal to one mile of travel on level track from the standpoint of work done on a railroad. Still, it takes no

more force to pull a ton of loaded car weight over one mile of track which rises 16 feet in that mile than it does to propel an equal load the same distance by boat.

The most desirable maximum railroad grade from a competitive standpoint, therefore, would be 0.3 per cent, or about 16 feet to the mile. The force required to overcome gravity on a 0.3 per cent grade is six pounds per ton. Added to the rolling resistance of three pounds per ton, this makes a total resistance of nine pounds per ton, the same as a boat going through water at moderate speed. Any higher grade gives more power advantage to the waterway.

It takes about seven times as much work to haul a train up a 1 per cent grade as it does to move the same train on a level track. Because of limited capital and labor, the early railroads were built to 1 per cent grades or higher. The maximum grades found crossing the highest mountains are most frequently 2.2 per cent, or about 116 feet to the mile, but a few grades on American railroad main lines are as much as 3 per cent. These present serious operating obstacles.

If a railroad has a gently undulating grade, part of the excess work expended in hauling a train uphill can be recovered on the downgrade, but these benefits offset very little of the costs of ascending grades. It is fortunate that the land is not perfectly flat, for it would be a dull world indeed if that were so; but the nearer you can make a railroad track provide a level surface, the cheaper it is going to be to operate the railroad.

Waterways adapted in their natural state to deep draft vessels have great transportation advantages; but if a waterway must be built, especially of shallow depth as in the case of the upper Mississippi River, you can build a railroad cheaper and you can also haul the freight with less physical effort, provided its grades are of "water level" standards. Of course, when the government builds the waterways, the taxpayer absorbs part of the freight charges, so the waterway, even if artificially provided, has certain advantages to an individual shipper and sometimes to the politician as well.

Linn H. Westcott.

Presidents Barriger of the Monon and Carroll Ashby of the Kentucky & Indiana Terminal discuss methods of handling interchange freight at Youngtown yard.

The use of roller bearings on freight cars would decrease the inertia to start trains and would reduce frictional resistance at low and moderate speeds, but it would still take six pounds additional drawbar pull to move a ton of train weight up a 0.3 per cent grade. Roller bearings are desirable but expensive, and the only way a railroad could justify an investment in them would be to keep its roller bearing freight cars on its own lines exclusively or to raise per diem charges to compensate the owner adequately when they are on foreign lines. If per diem charges could reflect the cost and benefit of roller bearing freight cars we would soon see many of them in use.

Curves are another very important element in increasing operating costs, as they introduce friction which is equivalent to grades, and impede high-speed operation. The same consideration of original first cost which resulted in the early railroads' heavy grades is likewise responsible for their excessive curvature. Cuts and fills are expensive things, and there are economic and engineering limits as to how deep a cut or how high a fill can be made. These considerations confined the early railroad builders pretty close to the contour of the ground, making it necessary to introduce heavy grades and sharp curves. Today, with modern earth-moving machinery, much deeper cuts and higher fills are feasible, and these will permit reducing grades and curves.

Future success of the railroads will be greatly influenced by the extent to which they eliminate all mainline grades of 1 per cent and heavier, and all curves of more than two or three degrees. This is a big job and a difficult thing to do. It will take the aggregate capital resources of the 130 individual companies to do this. It will facilitate that development to consolidate these into a limited number of systems so that the minimum amount of new capital will accomplish maximum results. I think it is the real solution of the railway problem. Once attained, we will come into the Golden Age of Railroads. But let me repeat that the basic engineering problem is the one of grades and curves and, except in mountainous areas, *all grades should be down to 0.5 per cent or less.*

A myriad of related structures, facilities, and appliances must be

integrated into a railway in order that its trains can be moved more expeditiously and more economically. We must build railroads which will entail a minimum of work to move cars at maximum speeds, and only a good beginning has been made toward accomplishing this objective. We will be on the road to attaining it when 5000-horsepower locomotives will haul 5000-ton trains at 35 miles per hour on maximum ascending grades, and 50 miles per hour average speed can be maintained.

Railroad freight transportation may appear fast to the railway man, but it seems slow to the shipper who relates hours in transit to distance moved. The railroads over the next five or 10 years at the most must speed up the freight service so that elapsed time in transit will represent continuous movement of 35 miles an hour, or about double the present performance.

Passenger traffic is a gold mine if speed is combined with low unit cost of operation. Modern motive power, communication, and signal facilities have greatly increased line capacity, and when C. T. C. is in use there is no material interference with the movement of revenue-producing freight trains. This handicap did exist in the past and probably was one of the reasons railroad managers were sometimes pleased to get rid of passenger service. Our own passenger potential is one of the bright spots on the Monon horizon, and I hope that our plans to provide fast trains giving superior service on presently light passenger density lines attract sufficient business to influence other railroads to capitalize these presently neglected passenger opportunities.

There are many magnificent trains, but too small a proportion of the train service of the United States is provided by trains of this caliber. There should be a much higher proportion of this type of train mileage. The trains which provide very high standards of service and speed will attract passengers in numbers that will produce very high revenue. The wartime passenger volume of the American railroads can be restored and actually increased if the railroads will offer fine service and fast schedules. Neither will do it alone, but a combination of both features will.

The fact that there may be inadequate passenger traffic density on a particular line at the present time is meaningless. One might as well say that there is no demand for a hotel at a location which is now a vacant lot, merely because there are no prospective customers down there with their baggage waiting to check in, as to insist that there is no demand for a train because no people are now waiting at the depot to ride on a phantom schedule that isn't going to run. The service must be supplied first.

Look at the experience of the streamliners between Chicago and the Twin Cities: There was a great deal of doubt on the part of skeptics as to whether the railroads should go in for that service, because it was generally known that in 1934 only about 25 through revenue passengers per day were the total patronage on the daylight trains of the three railroads running between those points. That was the narrow foundation on which the *Hiawatha* and the *400* and the *Zephyr* service was built. We know that those trains proved to be some of the most vitalizing influences on the railways. Trains were placed in service first and patronage followed.

That is what will happen when Monon establishes fast service on its lines. Our passenger revenues have not been encouraging, but considering how bad our equipment and the resulting performance have been, I sometimes think I should go down to the station and apologize personally to the passengers for Monon's unattractive cars, inadequate locomotives, and unreliable service.

The passenger trains already restored are provided to serve intermediate communities which have had no other means of rail travel. In this manner Monon discharges its obligations to its communities. The trains are well regarded by the local Hoosiers who have the choice of these trains or none at all. They are pleased to have the additional schedules added, even though the trains are seldom on time. On at least one occasion a train was as much as seven hours late when we had three separate steam locomotive failures within 68 miles of the initial terminal. But the wonder is that some of our old locomotives held together at all. When we get our full complement of diesels we will be able not only to adhere to schedules, but to shorten them. Our diesel-hauled through freight trains have no trouble keeping on time and so our carloadings are increasing.

While the present passenger service loses money the losses are not unreasonable in relation to the public good will created and the additional freight traffic obtained because the local communities appreciate our efforts. I am confident that as soon as we give real service — and we are planning a schedule of 2½ hours between Chicago and Indianapolis, 183 miles, within the next few years — we will fill those trains up and have to provide an increasing number of schedules. I think the passenger potentialities of Indiana are great, and I am confident that Monon passenger service will provide profits and friends for us.

The Monon has reversed its downward trend. Whereas it had the lowest proportional revenue gains during the war, it is now going ahead of the national average. We are currently handling the 550 cars per day which are needed to earn interest on our bonds. When we reach 750 and 1000 cars a day (and we think this is possible in a matter of time), the Monon will be among the best-paying railroad properties in the United States.

All railroads need capital. The only thing that prevents railroads from creating an ideal set of operating conditions for themselves is that they do not have the money to pay for them. That's the reason we do not all have our dream houses, automobiles, and airplanes. Everything depends on capital, and capital arises wholly out of earning power, either directly produced through funds made available out of depreciation charges or appropriated surplus, or through money attracted into the business through the sale of securities to investors.

Most railroads now have a reasonably good supply of funds available for capital purposes. Even the Monon has a two-year supply, and we believe that by the time that has been invested in

new property and equipment, we will be in a position to earn more and thus keep the railroad progressing steadily toward its goals. Capital is the real vitamin of business. The whole material progress of mankind has been due to utilization of machines. The machine not only raises the standard of living but creates jobs and opportunity.

The development of railroads has largely been measured by the growth of the locomotive. The use of the steam locomotive on the American continent dates back 118 years. The first one to turn a wheel on American soil was the *Stourbridge Lion* on the Delaware & Hudson, between Honesdale and Carbondale, Pa. That locomotive wasn't very successful, but it paved the way for later ones. It was not even the equal of a horse, but the improvement in the breed of horses has been slow over the centuries, while the improvement in locomotives has been great and has no limit. The breed now measures its size in 6000-horsepower units and larger. We know, too, that that isn't the ultimate limit at all. As the ingenuity of designers increases, we can pack more and more power between driving wheels that can run at high speed over modern tracks and bridges and around easy curves. Yesterday it was steam; today it is diesel. I believe the coal-fired gas turbine will take over within 10 years.

From the very beginning of time there has been the problem of increasing the productivity with which management utilizes labor and materials and capital. If we were to take the ton-miles produced per man-hour and compare them over the years, we would find a continually ascending curve, ascending continuously on a rate that represented an increment of 3 per cent per annum on a compound interest basis. That curve of productivity has occasionally fallen, but it has never gone backward and has never failed to resume the advance after a short period of time. That curve is going to reflect engines, men, labor, and material being used much more effectively in near future years than ever before.

More new machines of all sorts are now helping us run railroads cheaper, better, and faster. There never was a time when managers of railroads were more anxious to utilize modern methods. There never was a time, either, when capital was more abundant.

I believe this very effective combination will insure the railroads making more progress in the decade to come than in the entire period of railroad history up to this time.

J. F. Bennett, 1112 N. College, Bloomington, Ind.

Train 75 drifts over one of the bends in Clear Creek just two miles from Harrodsburg. The only major line improvement on the system is this track built as the Indiana Stone Railroad in 1899. The Monon's president, W. H. McDoel, and a director, James Murdock, formed the ISRR. Monon leased the line and also bought the bonds issued to help build it. This 10-mile line by-passes a bad two-way grade with a water-level route. Part of the old line is still used for local trains to reach quarries.

The Monon System and Its Traffic

"Up and down the Monon
Everything is fine,
'Cause that rootin' tootin' Monon
*She's a Hoosier line."**

BY LINN H. WESTCOTT

Several times a year the Monon Railroad operates a special inspection train to aid in the development of its business. Behind the engine is a baggage car, three or four coaches or Pullmans, and the inevitable business car. The trips take from one to five days, depending on how thoroughly the line must be scrutinized. The business party includes some or all of the company's higher officials, an executive clerk, Earl (the business car steward), and the guests. The guests may be any of the men interested in the Monon.

On one occasion, soon after John Barriger took over as president, all the traffic agents on the line and from the 14 off-line agencies were aboard. Barriger felt that since these men were devoting their lives to selling Monon service, the company could make no better investment than to give them a fresh and thorough inspection of the home road. It was the first time in more than 10 years that some of the men had seen home territory.

Other special trains are operated so present or hoped-for financial backers can get a better picture of the plant than printed words can give. Once each year the directors are taken over the line to show why money must be spent on improvements.

The list could go on and on, for the business car and its train is one of the most useful single tools a railroad can have. It is significant that no other industry can hold a conference while the entire plant passes by the windows of its meeting room.

Let us take a ride over the Monon with a business party.

The special stands on track 3 of Dearborn Station. A Monon man spots us before we reach the gate, and hands each of us a list of passengers and a mimeographed folder telling about places along the line. Before he leaves, we are introduced to four or five other Monon men and guests.

In almost no time at all, we are urged into the dining car for a breakfast of wheat cakes and sausage and a platter of sizzling eggs. After a short delay waiting for one of the guests who just arrived on Santa Fe's *Ranger*, the train slips easily out into the full sunlight and over the crossovers.

"That's our downtown freight house just west of the train sheds," says Ferd W. Kuhn, the road's congenial freight traffic manager. "Most people don't realize that the Monon, Erie, C&EI, Wabash, and Grand Trunk use a joint line into Chicago. It is called the Chicago & Western Indiana. The Monon's real terminal is at South Hammond, 23 miles down the track from here. We share the ownership of the C&WI and lease trackage rights from it. Besides our passenger trains, we run six transfer runs over the C&WI. Two come to the freight house, two to Clearing Yard west of us, and the other two run to the stockyards."

By this time we are rolling at fair speed past the wye where stockyard freights turn west from the main. Like most lines in the railroad hub, the C&WI is built on a high fill between concrete retaining walls with literally hundreds of street underpasses. Not until we reach South Deering, nearly into Indiana, do we come down to grade.

Well filled with breakfast, we walk back to the business car. We find Colonel Frank E. Cheshire, operating vice-president of the Monon, giving out background information to the guests. No one could better look the part of a businesslike colonel. Cheshire is a veteran of both wars, 48 years old and of sturdy build. He has served on the B&O and came to the Monon last year from MoPac, where he was master mechanic for lines west of Kansas City. During World War II, he gained more railroad experience with the Army. Soon after Barriger brought him to the Monon, his ability to untangle motive power problems was demonstrated. Later Cheshire became general manager and on June 1 was made vice-president.

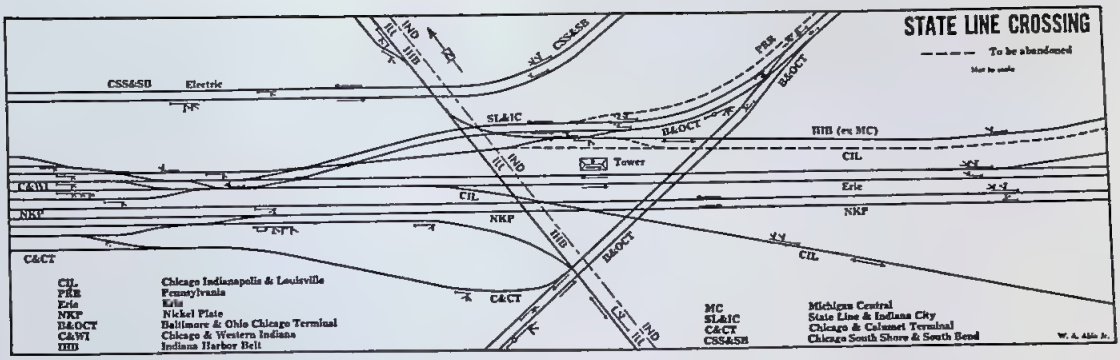
"How does the Monon compare with other Class 1 railroads?" someone asks Cheshire.

"A business paper recently called us 'a broken down regional carrier with infrequent and painfully slow train service, antiquated equipment, fading business, and pessimism — and operating deficits,'" answers the colonel. "Most of our men have conquered pessimism, and as you will see on this trip, we are making headway in other ways.

"Our line is about middle of the list if you rank the Class 1 roads by revenue. Our operating revenue last year was $11½ million. It compares closely with the M&StL, the Clinchfield, Colorado & Southern, and the Georgia Railroad. This group forms the largest of the small Class 1 railroads. With extra sales effort and better service to sell, we are shooting at a $16 million gross revenue this year.

"We have two main lines traffic-wise," Cheshire continues. "From Chicago to Louisville is 325 miles. This is our official main line; but the traffic from Chicago to Indianapolis, 184 miles, is also of mainline character. The Indianapolis line branches from the main line at Monon, 88 miles from our Chicago terminal.

*Verse by special permission of John A. McGee, copyright owner.



"Compared with many other Class 1 railroads, our system is rather short. We have only four branches. The one to Indianapolis is the longest. Due north from Monon runs the 60-mile Michigan City branch. Halfway downstate is the old Indianapolis & Louisville Railroad, an integral part of the system commonly known to us as the I&L branch. This runs from the main line to strip mines south of Terre Haute, nearly 50 miles. The shortest branch goes 18 miles from Orleans to French Lick. We interchange freight with the Southern Railroad at French Lick and also send a Pullman train nightly to French Lick Springs Hotel."

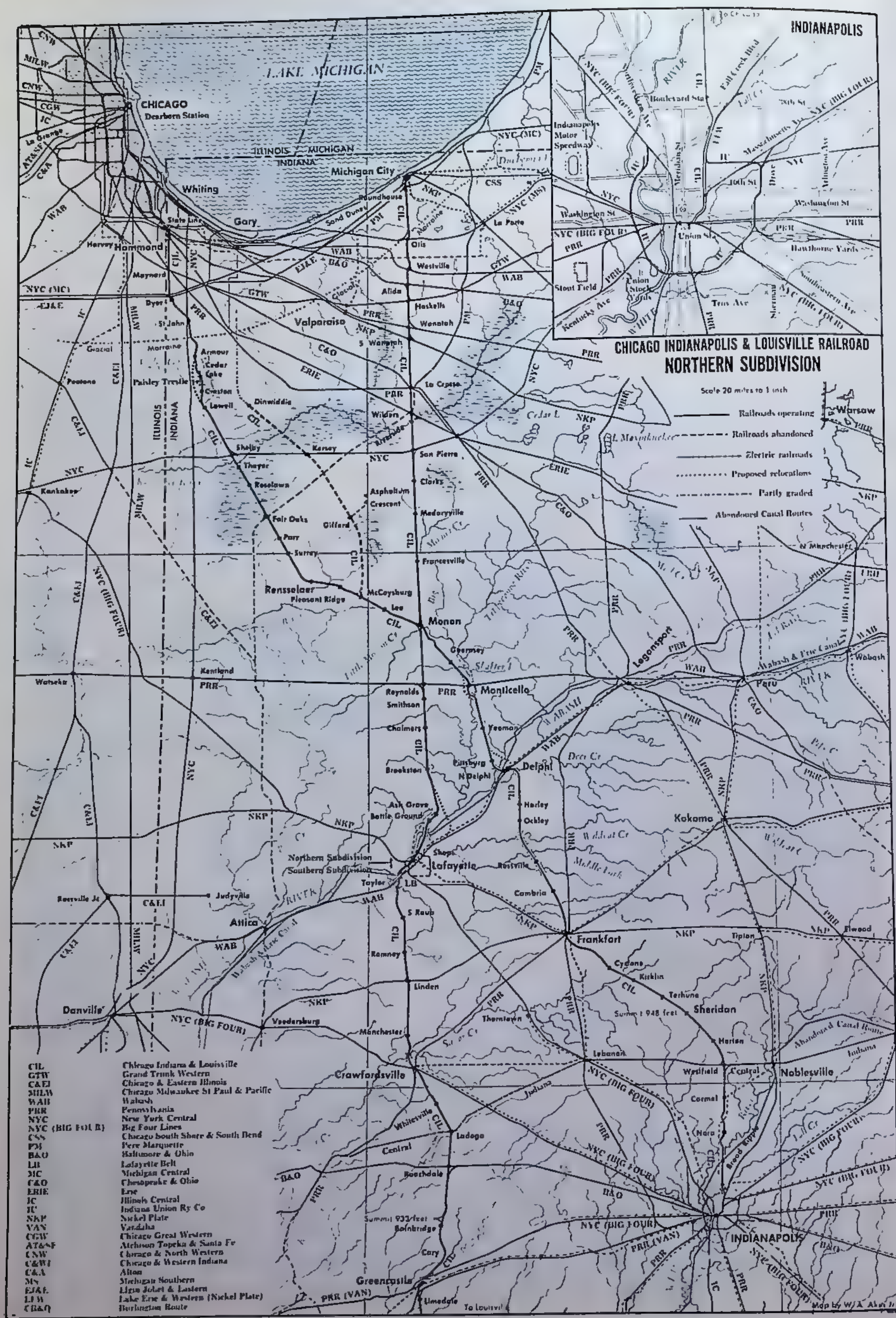
While Cheshire is talking, we turn east, pass over the Illinois Central tracks, then round bleak Calumet Lake to South Deering. After another four miles we come to a stop at State Line Tower, the largest mechanical interlocking in the country.

Earl puts the step down on the gravel ballast at the back of the business car and wipes the handrails. The party files out and across the tracks to the tower.

Inside, the somewhat unimpressive building looks much larger. From the windows and on the brand-new track diagram board we can see all the lines which intersect. Just west of the tower

Coal chutes at Monon Yard will soon be dismantled.

Linn H. Westcott.


CHICAGO INDIANAPOLIS & LOUISVILLE RAILROAD
NORTHERN SUBDIVISION
Scale 20 miles to 1 inch
Railroads operating
Railroads abandoned
Electric railroads
Proposed relocations
Partly graded
Abandoned Canal Routes
LAKE MICHIGAN
ILLINOIS
MICHIGAN
INDIANA
CHICAGO
Dearborn Station
Michigan City
Whiting
Gary
Hammond
Valparaiso
Rensselaer
Monon
Logansport
Monticello
Delphi
Lafayette
Kokomo
Frankfort
Attica
Danville
Crawfordsville
Greencastle
Sheridan
Noblesville
INDIANAPOLIS
Kankakee
Watseka
Paris
Peru
Wabash
Warsaw
CIL Chicago Indiana & Louisville
GTW Grand Trunk Western
C&EI Chicago & Eastern Illinois
MILW Chicago Milwaukee St Paul & Pacific
WAB Wabash
PRR Pennsylvania
NYC New York Central
NYC (BIG FOUR) Big Four Lines
CSS Chicago South Shore & South Bend
PM Pere Marquette
B&O Baltimore & Ohio
LB Lafayette Belt
MC Michigan Central
C&O Chesapeake & Ohio
ERIE Erie
IC Illinois Central
IU Indiana Union Ry Co
NKP Nickel Plate
VAN Vandalia
CGW Chicago Great Western
AT&SF Atchison Topeka & Santa Fe
CNW Chicago & North Western
C&WI Chicago & Western Indiana
C&A Alton
MS Michigan Southern
EJ&E Elgin Joliet & Eastern
LEW Lake Erie & Western (Nickel Plate)
CB&Q Burlington Route
Map by W.A. Allen Jr.

is the junction where the Monon and Erie tracks diverge on C&WI property. In all, 34 crossings and nine major junctions are controlled by hand power here, requiring 188 working levers and 19 spares. Modernization of the plant, now under way, is reducing all these figures; but State Line is still hard to believe.

The reason for so many crossings and junctions at this single point is that six major railroad lines converge in a narrow corridor of land between the city of Hammond and the swampy lake land just north. The Illinois-Indiana line passes through the interlocking along the east side of the Indiana Harbor Belt track.

As we move back to the train, the brakeman points to the place where the Monon property begins. A special fishplate connects the 112-pound C&WI rail to the Monon's 100-pound.

"How about rail?" we ask, as we take a comfortable seat in the lounge-observation room.

"About 140 miles of main track is still laid with 100-pound rail. We consider this substandard for modern freight and passenger service on a railroad our size." It is Chief Engineer J. C. Bussey speaking this time. "We want to lay 57 miles of 112-pound rail this year and 100 miles each year thereafter until all the main lines are relaid. Our Indianapolis branch will get first attention, as it is all in 90-pound section, except for some curves that were relaid with 100-pound rail in the middle '30's."

Bussey goes on to tell how the Michigan City branch has a considerable amount of 70-pound rail. In some places, this branch had been neglected by previous management to the point where four out of five ties had rotted and the spikes did not even touch the rails. We learn later on the trip that the branch had been slated for eventual abandonment, but that the present managers feel there are good traffic possibilities in the line.

Some sections of the main line were laid with 130-pound rail in the early '30's. This was during a sort of superrail craze all over the country. At that time, diesels were not in road service and pounding on the rail was considered a serious problem.

"Can you use the old 90-pound rail to replace the 75-pound rail on the branches?" we ask.

"Ordinarily, yes. We started to do just that, but most of our 90-pound rail is from a particular order that is very rapidly reaching old age. This batch is beginning to break and chip too much for further usefulness in any line service."

About this time we thump across the Michigan Central tracks in Hammond, a city of 70,000, and pass slowly by the Monon passenger station.

For a small railroad, the station is a surprisingly fine building. White limestone from Bedford and the architecture of the building make it look more like a small bank than a station. At many places along the Monon main lines and also at French Lick, these substantial stone stations add dignity to the cities they serve. They are as characteristic as red and gold signboards are on the Pennsylvania.

The rail clicks come faster and faster. From the rear platform we get a fine panorama of South Hammond yard. We remark how bleak and empty the yard is. It looks as if the railroad could use more business. Cheshire refers us to Superintendent C. C. Shoulty, a kind and accommodating gentleman if there ever was one.

"As a matter of fact, we are very proud of that yard," says Shoulty. "A railroad can't make any money on cars standing still in the yards, or even on a siding. The few cars you see over there

Lilian M. Westcott.

Home signal and switch at State Line where Monon and Erie part. Tracks to left connect with B&OCT line.

at the east are on the repair track. They were received from other roads in a damaged condition. Our repair crew will put them in shape before we move them at all; and the bill for repairs will be paid by the road that delivered the cars to us."

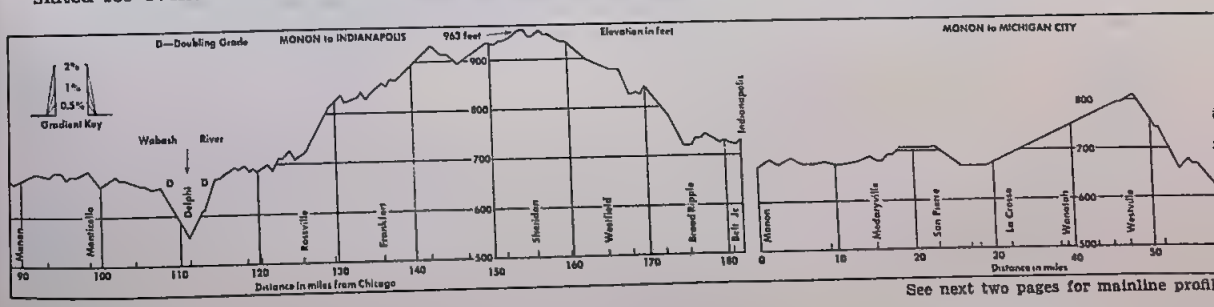
"What lines deliver to you here?"

"As you already know, we run six trains of our own into Chicago and back. These pick up cars from any of the railroads that enter the Chicago terminal district. Besides these, switchers of the B&OCT, IHB, and occasionally Erie bring cuts of cars down our tracks to South Hammond. Our EJ&E interchange is mostly at Dyer a few miles south.

"Co-ordinated with these deliveries and pick-ups, we run at least four through freights and one local freight south to keep the traffic moving. Two of the regular trains run to Indianapolis.

"Over there are the engine facilities and the roundhouse. With our diesel program, there won't be a roundhouse or water tank left on the Monon by the end of this year. This alone will make a saving of many thousands of dollars yearly."

Shoulty looks a bit dreamy as he tells us about the enginehouses, and soon the conversation leads to old days on the Monon. He relates several stories,



See next two pages for mainline profil

South Hammond. Linn H. Westcott.

but the one that strikes us most concerns the first ride Shoulty had on the old Bedford & Bloomsburg, once part of the Monon.

"That line is abandoned now," says the superintendent. "There was a tunnel at Owensburg that always gave trouble. Twelve years ago it had a particularly bad cave-in, and rather than dig it out, we abandoned the branch.

"The B&B was built as a narrow gauge line in 1875. It threaded 40 miles through the rolling hills from our main line at Bedford to Switz City. My first job as a brakeman on the Monon was on that branch. Already the line had been made standard gauge, and I was put under the care of a fellow a year or so older than myself for the run.

"After climbing the hill out of Avoca, running was easy for a while. We sat on top of one of the low box cars and I didn't realize at the time that my veteran friend was gradually edging me over from where I was sitting. We passed through Owensburg and in no time the tunnel was in sight. I was all prepared for the smoke (the tunnel wasn't very long), but what I didn't know was that a small cave came in at the roof of the tunnel and that a good-sized brook poured from it at all times. My 'friend' had edged me to the right spot to get the full quota of gallons."

We speed across very level land at a good clip now, going due south to Dyer, then turning slightly eastward. We have been crossing a plain which once formed the bottom of the larger Lake Michigan during glacial times. As the lake receded, long ridges of beaches were made. These are quite evident from an airplane over this region.

The plain comes to an abrupt end between Dyer and St. John. Here occur the first grades and curves for strictly topographic reasons. For the next few miles we cross over a moraine of mixed earth and stones deposited by ancient glaciers. It forms a ridge of gentle hills that forces every railroad entering Chicago from the east to take several curves and climb easy grades. [See map, page 22.] The grade on the Monon is one-half of one per cent for four miles. This is not stiff as grades go on many midwestern lines or even on the Monon; but it is still enough to limit the length, or rather the tonnage, of trains between South Hammond and Monon.

The profile of the Monon is almost like a slice through Indiana from north to south. For 30 miles the line slides over the flat lake beaches at an elevation of around 600 feet. In the next 20 miles the moraines lift the track about 130 feet and drop it into the flat valley of the Kankakee River. The running is fairly level from here until the line drops into the Wabash valley at Lafayette.

Northbound steam trains coming up the nearly one per cent grade out of the Wabash valley often had to use pushers. The new diesel locomotives have higher tractive effort at slow speeds and so pushers are not needed as often on this type of grade. Cheshire elaborates on this point:

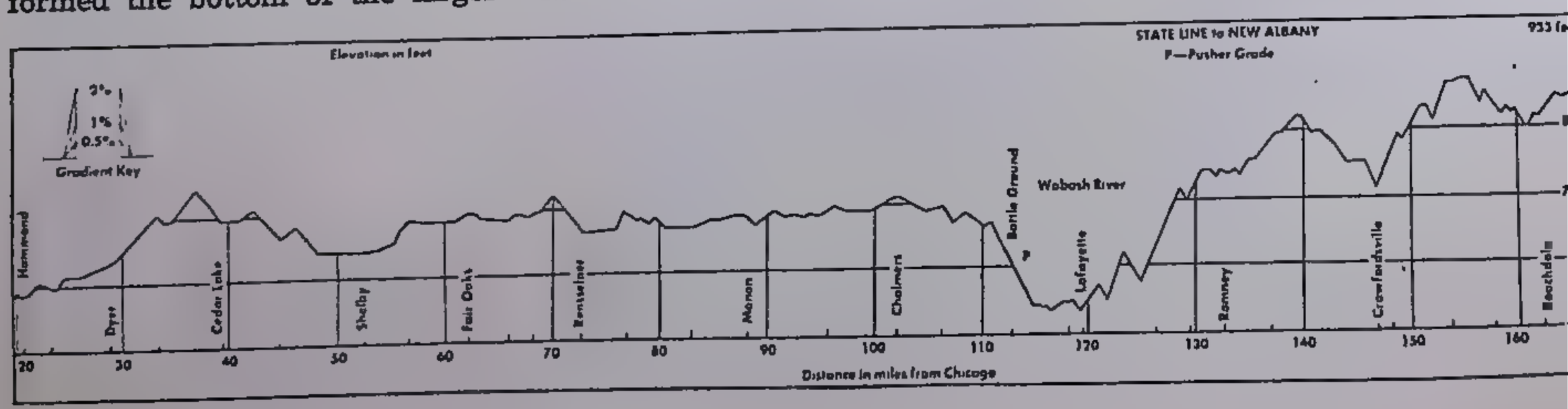
"The Monon is particularly adapted to the efficient use of diesel power because it is a cross-drainage line. All the way from Chicago to Louisville, the line crosses one river after another and climbs the ridges in between. A train climbs the equivalent of two-thirds of a mile on its way between terminals on grades ranging from slight rises to over two per cent. With steam power each hill limits the tonnage that can be hauled over it without using pushers. The diesel slows down on the grades but it climbs them unassisted, so it is almost as good as a new track with easier grades."

"Rolling country" is a modest description for some parts of Indiana. South from Lafayette the line climbs gradually 50 miles to a high point at Bainbridge, crossing several valleys en route. But the next 150 miles to Louisville are just one dive after another with steep grades the rule all along. In all the distance from Chicago to Louisville, only 10 miles are located along a stream bank. This is along Salt Creek north of Murdock.

Almost every stop along the northern lines of the Monon has its grain elevator. Indiana is largely an agricultural state. This rich farm land, being generally level, was useless for agriculture until a system of drainage ditches and buried tile was developed. Now 90 per cent of the land is used. Next to coal, stone, and cement, the grains are the Monon's chief on-line car loadings. Toward Louisville where the country is more cut up, agriculture is less intense. The limestone quarried and milled in Bedford and Bloomington is the chief traffic builder on the southern part of the main line. It is considered the finest building stone in the country. Cement from Mitchell (near Bedford) and Limedale (near Greencastle) is also very important.

But the most important carloader of all is coal. Much of this is brought to the main line on the I&L branch.

Our train is now descending an abrupt but short grade with a



Paisley Trestle.

Linn H. Westcott.

noticeable brake application. A few feet from the rails on the east side of the track is the shore of Cedar Lake, which we follow for two miles. This is one of the finest scenes to be seen from any railroad in the Chicago region.

"This view won't be here very much longer if the I. C. C. approves our petition to relocate our main line between Armour and Lowell, six miles south," says Cheshire. "Many factors make this short piece of track an undesirable location. In another minute we will cross Paisley trestle. The trestle is 963 feet long and runs over a seemingly bottomless bog. It reminds one of the classic Chat Moss on the Liverpool & Manchester line in England. The track is only a very few feet above the water and mud; but the 60-foot piles driven into the bog do not touch bottom. The trains are held up by friction alone. The fills approaching the trestle consume a lot of material. Some gravel works up to the surface as far back as the telegraph pole line.

"Besides the bog crossing, trains must run along the shore of the lake at reduced speed, since the track has several bad curves and also because so many bathers cross over to get to their cottages. The slow-speed running makes it difficult for heavy trains to climb the grade north of the lake.

"Our new line will run west of here on high land and there will be only one curve on it. This project should be completed in a year at a cost of about a half-million dollars. Half of this can be charged against operating expenses, and in addition there will be about $30,000 worth of salvage from the present line."

"Are you planning any other line relocations?" we ask.

"We expect to eliminate grade crossings with other railroads at Dyer and St. John, and at the same time improve the profile there," Cheshire answers. "We hope in the next two or three years to reduce all the curves to one degree or better, and all the grades to half of one per cent or better on the Chicago to Indianapolis line. After this, we will tackle the Louisville line, which will involve a much greater expense. You will see the individual projects later on the trip.

"Our railroad also runs down city streets in several places. This was considered desirable in the old days when the railroad was merely an improvement over the stage coach. It is far from desirable now, and relocations will be expensive."

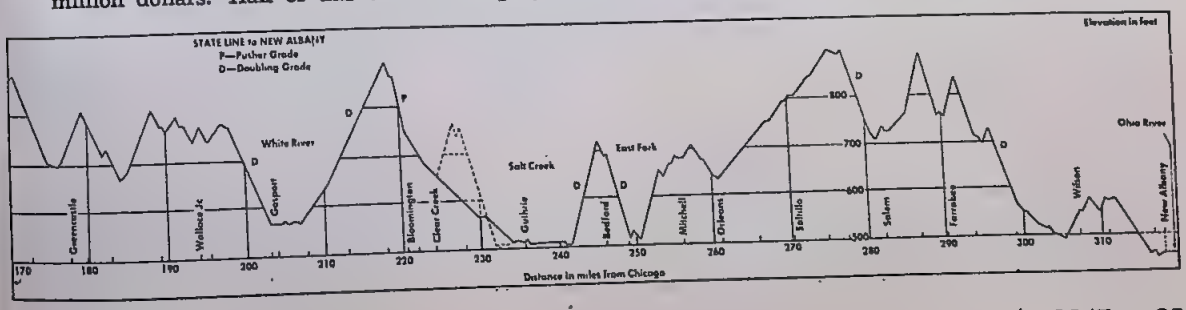
We roll over Paisley trestle at a 20-mile speed, hardly realizing how such an innocent-looking structure can be a villain. Beyond Lowell, where an imitation brick plant provides good carloadings, are the flats of the Kankakee River. Here the farmers have spent considerable sums on drainage ditches, long, deep, and wet. The Army is also working on a project to improve the Kankakee as a part of its big Illinois basin project.

Mimeographed books of tables, lists of shippers, track profiles, maps, and latest information on revenue and costs are made available to us; and as we cross the relatively repetitious country near Rensselaer, we find a number of interesting facts. Freight trains average 17.9 miles per hour overall. They average 1800 tons per train. This is about 30 loaded cars and some empties, as well. Two years ago, trains hauled over 2000 tons. At first this would seem as though business is slipping, but more trains are run now to improve service. Twenty-four cents' worth of fuel will move 1000 tons of freight one mile.

Another table shows that the operating ratio dropped from around 80 to the high 60's during the war. In the first month of this year, it was 88.6. This operating ratio shows that $88.60 out of every $100 taken in goes for operating expenses. Taxes, interest, and rents must come out of the remaining $11.40. If they don't the railroad loses money. A low ratio is naturally desirable, but not if it is created by neglecting to maintain locomotives, tracks, and other facilities. During the war, this was the case on the Monon.

Some of the railroad figures are astronomical. There are 2,271,897 ties in the track, three per cent are renewed each year. Put end to end, all the Monon bridges would extend about eight miles.

Scanning the pages, we find



passenger trains now average 35 miles per hour and run from five to six cars.

After a 1½-hour run from State Line, our train pulls up at the platform of the station in Monon. Monon is the crossroads of the CIL. Historically, it is the place where the "Air Line" from Chicago to Indianapolis crossed the New Albany and Michigan City line, forming a big *X*. A Bedford stone station stands between the connecting track that forms the present main line and the diamond where the Indianapolis and Michigan City branches cross. A thousand feet west are the yards and engine terminal. A daily way freight and daily through freight for Indianapolis originate here.

The principal reason for our stop at Monon is to pick up John Barriger, the line's president since May, 1946. He is one of the youngest Class 1 railroad presidents. Barriger arrived from the east at Michigan City early this morning and rode down the branch to Monon on one of the new autorailers which the railroad is using for track service. The autorailer is capable of handling tools for trackwork and runs, both on highway and railroad track interchangeably.

The road's president is in no way like the traditional business tycoon who must have a pompous environment to support his self-esteem. This man is business humanized and somewhat streamlined. He speaks to everyone. Already he knows more than half of the Monon's 2000 employees by their first names.

Barriger is constantly aware of every factor in his railroad business. He never casts aside a new idea or suggestion, no matter how fantastic, until he is assured by careful thought that it is definitely impractical.

Proof of his abilities are already showing on the railroad. Many of the older employees have survived several managements. Almost every one of them feels that the railroad is now going in the right direction.

The most valuable asset in Barriger's personality is probably his honest frankness. Soon after our special starts rolling on toward Indianapolis, someone asks why he is so open about his plans for the future of the railroad. Isn't he sticking his neck out?

"Well, sir, I figure if I don't tell people what we want to do, we can never get a job done; but if I do tell them what we want, most people are going to try to help us."

It was this very process that helped to put Barriger at the head of the Monon. He had a number of good but untried ideas for railroads. Some of these ideas he explained in an article in TRAINS in December, 1943. This aroused some attention among the new owners of the Monon, and after several conferences, Barriger was chosen for the road's president, following its depression and wartime receivership.

The road's owners, including New York Life Insurance Company, are interested in the results of the revitalized Monon. If they are good, the principles may be developed further on larger systems. The program demands initiative, operating skill, salesmanship, and a good deal of money. The depreciated $25 million value of the Monon will have to be swelled by another $26 million in the first three years, and another $20 million in the following two years. Wall Street considers this a gamble and a bad risk, but is nevertheless watching very, very carefully, for things may be learned that could save many American railroads from the skim-milk economy on which they now live.

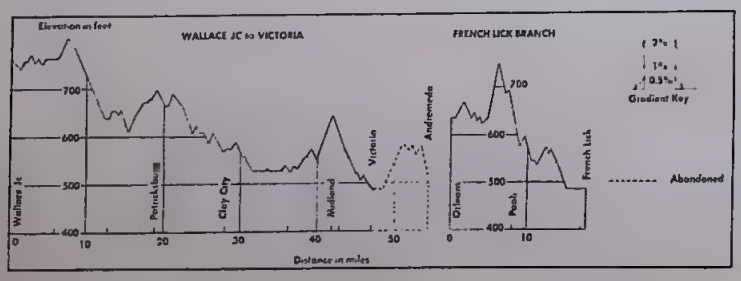
The biggest question cannot be answered for some time: "Can the Monon generate enough traffic to justify its heavy expense program?"

The principal improvements on the Monon encompass a speed-up of freight service on all lines; scheduled freight runs so a shipper can depend upon pickup and delivery as advertised; fast, comfortable passenger service from Chicago to Indianapolis and Chicago to Louisville; motive power, car, and roadway improvements to make these services practicable. Co-ordinated with this and perhaps most important of all, is a livening up of the traffic department. Barriger says the traffic men really should run the railroad.

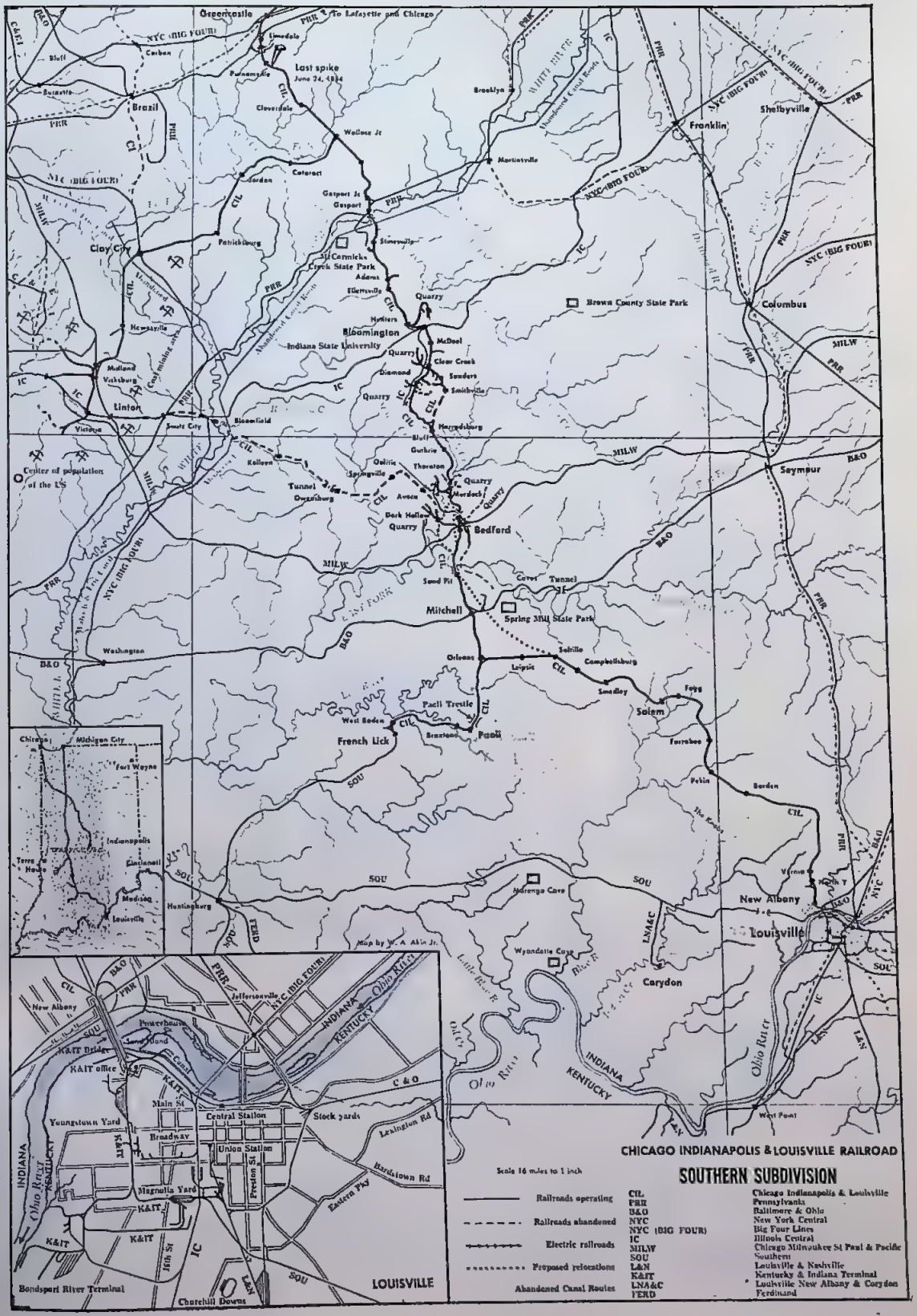
Since Barriger, and later his first mate, Cheshire, came to the Monon a year ago, much headway in these directions has been made. Freight service boasts a very good on-time record, and traffic or no traffic, the scheduled freights are making their runs to prove to shippers that at last the railroad really means to give service. Considerable track improvements are under way involving new rail, ties, stone ballast from a Monon quarry, and easing of curves.

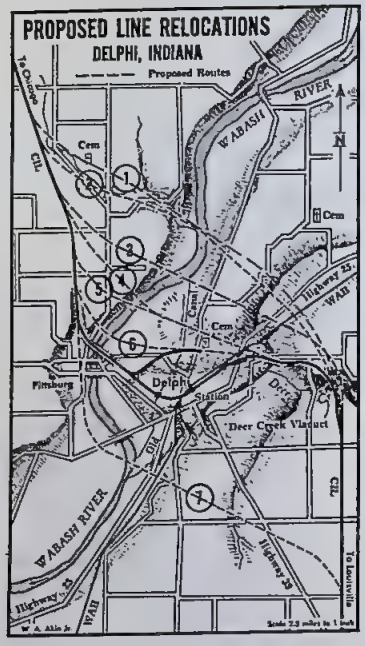
Signals (most Monon signals are upper quadrant semaphores) will be respaced for higher speeds, and automatic interlocking plants will replace various obsolete forms of protection at many crossings. Within three years, C. T. C. will control train movements between Lafayette and Vernia, near Louisville. This C. T. C. installation will give the railroad the protection and dispatching advantages of C. T. C., but original cost will be trimmed by not equipping switches with motors. Train crews will work switches according to signal indication.

Pullman services between Chicago and French Lick and Louisville have been restored, and where only one train formerly ran to Louisville with a connection for Indianapolis, two trains now run to Louisville and two more to Indianapolis. A passenger train from Lafayette to Michigan City may even be added in the future.



We pass down the center of a tree-lined street in Monticello. In two years this will be replaced by a faster line in the fields west


CHICAGO INDIANAPOLIS & LOUISVILLE RAILROAD
SOUTHERN SUBDIVISION
Scale 16 miles to 1 inch
Railroads operating
Railroads abandoned
Electric railroads
Proposed relocations
Abandoned Canal Routes
CIL Chicago Indianapolis & Louisville
PRR Pennsylvania
B&O Baltimore & Ohio
NYC New York Central
NYC (BIG FOUR) Big Four Lines
IC Illinois Central
MILW Chicago Milwaukee St Paul & Pacific
SOU Southern
L&N Louisville & Nashville
K&IT Kentucky & Indiana Terminal
LNA&C Louisville New Albany & Corydon
FERD Ferdinand
Greencastle
To Lafayette and Chicago
Last spike
June 24, 1884
Brazil
Clay City
Linton
Bloomington
Indiana State University
Brown County State Park
Franklin
Shelbyville
Columbus
Seymour
Bedford
Mitchell
Spring Mill State Park
Salem
Paoli
French Lick
Louisville
New Albany
Corydon
Huntingburg
Washington
Center of population of the US
Chicago
Michigan City
Fort Wayne
Indianapolis
Cincinnati
Madison
Louisville
Terre Haute
Jeffersonville
Powerhouse
Sand Island
Main St
Central Station
Stock yards
Union Station
Youngstown Yard
Broadway
Magnolia Yard
Preston St
Lexington Rd
Hardstown Rd
Eastern Pky
Bondsport River Terminal
Churchill Downs
LOUISVILLE
Ohio River
INDIANA
KENTUCKY
Map by W. A. Akin Jr.



of town. Ten minutes later and we are dropping down to the Wabash River at Pittsburg, near Delphi. The track follows a ravine down a 0.54 per cent grade with a sudden increase to 1.76 near the bottom. The grade continues out over the Wabash River bridge. This structure was so weak until recently that speed was restricted to 15 miles per hour for all trains. Reinforcements have brought this up to 20 miles; but northbound trains are still seriously handicapped by such a speed restriction, not to mention a sharp curve at the foot of the heaviest grade on the Indianapolis line.

John Barriger points out the windows to the north as we cross the river. "We want to eliminate this bad grade and curve situation by building a new high-level line from that bluff over there to the opposite bank of the river," he says. "It will at the same time eliminate another grade which southbound trains climb just beyond Delphi."

We cross the tracks of the Wabash, and halfway up the grade beyond pass over Deer Creek viaduct. This 853 x 60-foot structure spans one of the wooded beauty spots mentioned in James Whitcomb Riley's works. In winter, one can easily see the meaning of the phrase from the song, "On the Banks of the Wabash," which describes the candlelight gleaming through the sycamores. The upper branches of these trees are a ghostly white at night, and they stand out in stark relief as a headlight plays upon them.

Eight miles farther along, the line crosses North Fork of Wildcat Creek on a 1278 x 60-foot steel trestle. This is the longest bridge on Monon right of way.

We are almost to Frankfort, the largest city between Hammond and Indianapolis. Three railroads and many industries are located here. The grade crossings with the Nickel Plate and the Pennsylvania will soon be protected with modern interlockings instead of the manual targets now used.

Sheridan, at 155 miles, is the highest point on the Monon, elevation 948 feet at the station. It is also an ideal shipping town for the company. No other railroad serves Sheridan's mere 1700 population, but the community and miles of farmland around contribute over $100,000 revenue each year. The traffic is four times as great as that at Frankfort. Here the Wilson Milk Company operates a large canning plant. Besides Wilson's there are two grain elevators, Wallace Grain Company's and Sheridan Milling Company's. A fuel bulk plant and several other smaller users help swell the carloadings to over 2000 a year, of which 1200 are inbound. A more typical town would have one grain elevator and a coal yard as principal customers.

As our train speeds southward from Sheridan toward Indianapolis, Barriger tells the guests some interesting facts about the Michigan City branch:

"The branch to Michigan City was originally the main line. As it was located there before any other railroad, we had the advantage of first construction. This means that all the interlocking towers are built and manned by the other companies. As a matter of fact, this condition is so universal on the Monon that the only interlocking tower we own is at Clay City on the I&L branch. The Michigan City branch crosses every railroad that enters Chicago from the east except the Michigan Central. This makes 12 crossings in 36 miles. Running a train up the line is almost like a steeplechase.

"At one time this branch was slated for eventual abandonment. The track is in very bad shape now, but we feel it has good traffic potentialities. Quite a lot of coal moved north on it to the big Northern Indiana Public Service plant in years gone by. This business dropped from over 3000 cars in 1944 to 500 cars in 1945 when the utility began buying from Illinois mines due to coal supply being exhausted.

"On the branch there is a 65-mile section of track from Westville south to Ash Grove (along

GRAIN

At Sheridan.

MILK

At Sheridan.

LUMBER

At Greencastle.

the main line) that has easy grades and no curves at all. This is one of the longest tangents in the country."

The Monon's north-south location is not ideal for picking up large amounts of interchange traffic from the railroads it crosses, especially on the Northern subdivision. Since there are many alternate routings through Indiana, the company has little bargaining power to get a favorable division of revenue from interline business.

As a bridge line the CIL is most active hauling coal and other products north from the Southern and L&N at Louisville. These roads, which once owned the Monon, turn over 150 cars a day at Youngtown yard, Louisville, where Monon trains originate. At Chicago the EJ&E is the biggest single interchange road. Other important interchange connections are with Milwaukee Road at Bedford, Midland, and Chicago; New York Central-Big Four at many places; Nickel Plate at South Wanatah, Lafayette, Linden, Frankfort, and Indianapolis; North Western at Chicago; and Baltimore & Ohio at Mitchell, Roachdale, Alida, and all terminals. Six cars out of every 10 on the Monon are received from a connecting line.

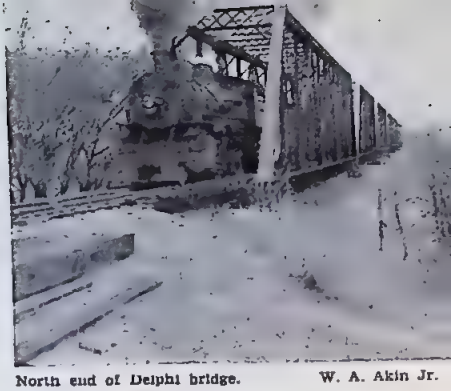
There is some talk of a through passenger service to Cincinnati via the B&O from Indianapolis. This service is now well cornered by the Big Four, which is also the busiest Chicago-Indianapolis line. Through passenger service from connections in Louisville would also be desirable when the Southern subdivision of the Monon has been improved sufficiently to be speeded up.

In years gone by, the Monon was famous for its dining car service. A revival of the old wonderful food program is already making progress, and when the new cars are put into service, Monon passenger service will rival that of any line.

After slowing down for a bad reverse curve at Nora and crossing the White River at Broad Ripple, we enter the outskirts of Indianapolis near Fair Grounds. Here some years ago the railroad built a fine brick station called Boulevard. Passenger trains stop here for the convenience of anyone living in the northern part of Indianapolis. It is a facility like Wabash's famous Delmar station in St. Louis. For a while during the receivership years, Boulevard was closed down.

Soon we are passing Belt Junction, where freight trains branch off to be handled on the Indianapolis-Union Belt Railroad. Monon maintains a small yard, and passenger trains run over Nickel Plate and Big Four tracks to the Union Station.

The center of the city's business district, its fine hotels and the famous Columbia circle with the large war memorial in the center, are all within two city blocks of the waiting rooms of the station. Indianapolis' 387,000 residents boast that their city is the largest city in the world not located on navigable water. The railroads and formerly the interurban lines radiate in 16 directions, each line heading directly over the level land for its next objective. A good year here provides the Monon 12,000 carloads of revenue freight, adding about a half-million dollars revenue.



North end of Delphi bridge. W. A. Akin Jr.

The Southern subdivision of the Monon starts at Lafayette in the Wabash valley, a little over 50 miles northwest of Indianapolis, but 127 miles the way our business car goes up to Monon and then down the Louisville line. Lafayette is the Monon capital. Here are the company offices, the dispatchers, the engineering drafting rooms, and Vice-President Cheshire's office, all in an old brick building at the north end of Fifth Street. Here also, about a mile farther north, along the basin of the old Wabash Canal, is Shops. At Shops are the engine terminal and a yard for changing length of trains between the easy-going Northern subdivision and the rugged Southern. On a hill overlooking the yard are the car and locomotive repair facilities, company warehouses, supply stores, the motive power offices, and a roundhouse soon to be dismantled.

Lafayette is the largest city between Monon terminals. The Monon passes through it down the center of Fifth Street for a little over a mile. Back of the sidewalk is a fine Bedford stone station. Monon freight trains pick up some 800 cars a year from a large aluminum plant east of town which was developed during the war. Ralston-Purina also develops

COAL

At Wallace Junction.

STONE

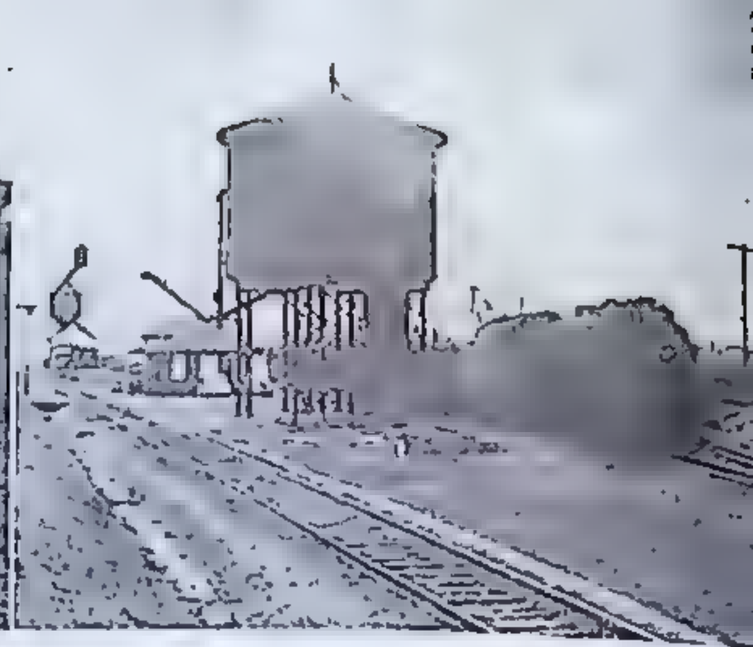
At Bedford.

CEMENT

At Mitchell. All photos by Linn H. Westcott.

Linn H. Westcott.

W. A. Akin Jr.



Linn H. Westcott.

The Fourth Street overpass↖ in Lafayette is the restricting clearance on Monon mainline loads. Vertically loads cannot exceed 17¾ feet while horizontally the limit is 12 feet. Every railroad has similar restrictions carefully charted for all possible car routings. Train 74↖ passes through Crawfordsville on time, as is now usual. Wallace Junction↑ has scales for weighing coal trains, coal, water, a wye, and a passing track. Brakeman Campbell, who works on the day

considerable tonnage as do some gravel pits near by.

To eliminate the long stretch of street-running and also the bad grades for northbound trains beyond Battle Ground, the railroad's location engineers are scratching their heads. One project that seems somewhat feasible would use the Wabash tracks north through the town and then a high-level bridge across the Wabash River connecting to the main line at a point near Ash Grove. The fill approaching the bridge would be very expensive and Shops would be left stranded with no convenient connection to the main line. Another plan would tackle the two problems — grade and street-running — independently.

Southward the main line crosses the combined Big Four and Nickel Plate tracks, eases its way up the east bank of the Wabash valley, and passes under the Wabash Railroad, striking in a general south-by-east line for the next 130 miles to Orleans. This line is approximately the extreme eastern limit of the Indiana coal field.

At Linden, interchange with the Nickel Plate puts Monon on what is currently the fastest freight routing from Louisville to New York. DL&W or Lehigh Valley continues from Buffalo.

We pass several grain elevators and then a brick kiln before going over the high steel Potato Creek viaduct to Crawfordsville.

Monon, Big Four, and Pennsylvania tracks make a tight triangle where they cross at Ames on the far side of Crawfordsville. To the west is the new Donnelley plant where some of the country's largest magazines are printed. For Monon the Crawfordsville Light & Power's annual 450 loads of coal are the biggest traffic item. The elevator of the Indiana Farm Bureau is also a user of more than 100 cars a year.

Beyond Roachdale, an important interchange point, a grade of nearly one per cent lifts trains to Bainbridge, the summit of the Southern subdivision, at an elevation of 933 feet. This is almost as high as the Air Line summit at Sheridan. Most of the bad grades and curves of the system are between here and Louisville.

Many of these bad grades will eventually be eliminated, or at least reduced, by an expensive relocation program. Contrasted with the 0.61 per cent south and 0.50 per cent north ruling grades of the Northern subdivision between Hammond and Lafayette, the section from Lafayette to McDoel yard (near Bloomington) is not too bad: south 0.64 per cent and north 0.88 per cent. Beyond McDoel, however, the grades are south 1.25 per cent and north 1.50 per cent. For this reason, engines and train lengths are often changed at McDoel. With steam operation the Southern subdivision has six doubling grades and one pusher grade. The pusher grade is just north of Bloomington and so is often operated by the McDoel yard switcher.

An examination of the maps and profiles shows that the only important piece of track relocation on the railroad is where it is known as the Indiana Stone Railroad between Clear Creek and Harrodsburg south of Bloomington. Here a bad hill was eliminated 48 years ago in favor of an along-the-creek location. This improvement involved rock cuts that the original location engineers did not care to make.

A similar relocation along Salt Creek may later eliminate the bad hill up to Bedford and down again to White River. By gradually chipping away at the weakest points, a railroad can keep its operating costs in line with the demand for increasing traffic; but there are so many weak points in this up-and-down territory south of Bainbridge that a single line improvement has much less effect on operating costs than, for example, the Delphi bridge relocation on the Indianapolis line.

Approaching Greencastle the track passes under a Big Four bridge and then climbs past the Barnaby Lumber Mill to the old wood frame station. Besides Barnaby's hardwood, which is used for furniture making and fine woodwork, we find other new kinds of industries on the southern part of the railroad. Here in Greencastle calcium carbonate products are made by the Rightsell Company, which uses 125 cars of inbound materials. Here, too, Ball Brothers have a branch, the American Zinc Products Company; and John Figg operates a large wholesale grocery.

At near-by Limedale is a huge cement quarry east of the Monon-Pennsylvania interlocking tower. Southwest of the same tower is the cement plant of the Lone Star Cement Company, which contributes nearly 2000 cars a year to the Monon, and in addition receives over 100 cars of coal and other supplies. A private track passes under the Monon between the quarry and plant.

In the next few miles we leave the glacier-scoured country and pass into the land where cliffs of Bedford limestone hang over lazy creeks. This is the beginning of the Cumberland Plateau, which extends as far as the State of Virginia. Wallace Junction marks the place where the coal trains from the I&L branch join the main.

The first five miles of this branch, now never seen by a

Left photo, J. F. Bennett; others by Linn H. Westcott.

passenger train, points out to children how the coaling tower resembles a goose. North of Bloomington a pusher↖ is needed for many of the trains. At McDoel, McCabe's rooming house↗ always welcomes trainmen when away from home. South of Harrodsburg is a sandstone sidehill cut↖ which is one of the more beautiful features along the line. An engine and caboose↗ run extra through the cut headed for French Lick to bring a string of cars from the Southern.

regular passenger train, are the most rustically beautiful on the whole system. The track follows Mill Creek to Cataract and then breaks away into a true wilderness with very few roads or inhabitants. Near Cataract, Mill Creek dives over two sets of rapids and falls, the biggest in the state and well worth seeing. The upper falls once had a mill along its bank whence the creek was named. This falls is the more interesting of the two.

Beyond the wilderness, the branch reaches open country at Clay City. Here and at Midland the Maumee Collieries have huge drag buckets that lift 70 feet of rock cover off the coal so that steam shovels can take out the four feet of precious fuel.

"This region is the biggest producer of on-line traffic for the Monon," Freight Traffic Manager Kuhn tells us. "The railroad operates no mines, but it does own lands which are leased to mine operators, thus assuring continued loads for the railroad. Twelve thousand cars of coal are not unusual for a good year. The new Maumee 28 mine at Midland alone is now supplying as many as 40 cars a day."

The Terre Haute line of the Milwaukee Road, the Illinois Central, C&EI, Pennsylvania, and Big Four also have tracks in this region.

Following the main line from Wallace Junction, we pass through Gosport, where some 400 cars of gravel are annually pulled out of a hardly noticeable pit south of the ancient station. Just beyond we cross the same White River that was crossed at Broad Ripple.

The first large building-stone quarries can be seen on either side of the tracks south of Ellettsville. The hill dropping from Hunters to Bloomington requires pushers for northbound trains. In the two miles from the summit the track drops over 100 feet and passes beneath the Illinois Central line to Bloomington.

Spence Pearson, in charge of freight solicitation on the Southern subdivision, talks with us as our inspection train enters McDoel yard a mile south of the limestone passenger station at Bloomington. McDoel is the center of much activity throughout the Monon day. The yard is typical of any medium-size railroad yard, with repair servicing, classification, and fueling facilities. Near by is the yard office and on a hill not far away, a typical railroad lodging house known as McCabe's. At the yard a sleeper is cut off every night to continue on to French Lick by separate train.

"Bloomington and Bedford, which are only 27 miles apart, vie with each other in a friendly way for the stone business," Pearson tells us. "Each city is surrounded by quarries, and many other quarries are located in the area between them. Each city also has mills where the stone is cut and finished before shipping out to be assembled as churches, post offices, homes, and monuments. Monon has competition from the Illinois Central for the stone business in Bloomington, while the Milwaukee Road has been giving us some concern in Bedford.

"A local freight called the stone train picks up the great blocks from the quarries and delivers them to the various mills. Three or four thousand carloads of stone make this the second principal revenue traffic on the railroad. Much of the revenue is from Indiana Limestone Company which runs several quarries and mills."

It is between Bloomington and the base of the grade at Murdock that the Monon follows its only stream valley, running down a 0.66 per cent grade through the finest scenery on the main line. The most picturesque part of this canyon is just north of Guthrie. Here the line hugs a sandstone bluff above Salt Creek. At Clear Creek a spur, formerly the main line, brings in stone from Bloomington Limestone Corporation and from Woolery Stone Company. At Murdock very shiny rails turn west to the maze of quarries near Oolitic. Here derricks lift huge rectangular blocks from the saws in the pits to waiting flat cars.

"The history of the Bedford limestone transportation business is an example of how not to run a railroad," says Pearson. "A railroad traffic department is expected not only to take care of the customers in the usual way, but also to encourage new business, and by no means to discourage old business.

"The traffic department has only one thing to sell: service. If the railroad fails to give service, traffic falls off. This happened on the Monon. The limestone business was once excellent on the line. Along came the depression. The Monon cut its service to the extent that shipments were delayed days and even weeks. During this period, some limestone finishing mills and some quarries were shut down. Other mills were handicapped by lack of train service and turned to the highway."

Pearson winced at the memory, then continued: "The same conditions also account for the fact that very, very few new war industries developed in any Monon territory. War industries—any industries—require good transportation, and Monon wasn't furnishing good transportation.

"Those were tough days for the traffic department," continues the

Southbound train approaching Bedford station. Linn H. Westcott.

freight solicitor. "But now we're staging a comeback. Now we have service to sell, and we're selling it. Monon now gets 60 per cent of the stone business, about half a million revenue. With an upswing in building stone sales, the revenue may reach $2 million eventually."

Even though much stone hauling is for as short a distance as 10 miles, a car may bring $100.

In approaching Bedford from Murdock, the main line climbs a 1¼ per cent grade with a short stretch of 1.62 per cent at the base. Near the summit, it passes under the threatening Milwaukee Road spur from the quarries and crosses the junction switches of the former Bloomfield-Switz City branch and the Milwaukee Road main before reaching the station.

The Bloomfield branch now only runs as a spur to the Dark Hollow quarries.

South of the station, the track runs through city streets past Central Square and then down a steep hill to the crossing of the branch of White River known as East Fork. This grade is 1.40 per cent for northbound trains, with a short stretch of 2.03 per cent. Future line relocations may run along Salt Creek, as mentioned previously, or possibly through a cut-and-cover tunnel under one of the streets in Bedford. Beyond the river, the last of the limestone quarries is located at Mitchell, where the Monon crosses the B&O. Like the first quarry at Limedale, this also produces cement, and although located on the B&O, it contributes 1500 cars for Monon trains. Nearby Spring Mill State Park is a key attraction for the Indiana tourist.

Orleans marks an abrupt right-angle turn in the railroad. There is no physical reason for this sharp curve, but when the railroad was built, the town managed to persuade the line to detour through it. The old station building, with its door where freight cars were once pushed inside, stands in the center of the wye of the French Lick branch.

Down the branch, over the 870-foot steel trestle at Paoli and on through the Lost River valley, runs an extra freight train each day to connect with the southern at French Lick. Each morning and after dark each evening, the same small diesel locomotive which works the daytime freight pulls a baggage car, a coach, and a Pullman sleeper to and from the French Lick Springs Hotel. This hotel is one of the few scattered about the country where a person can spend upwards of $20 a day for room and board in luxurious settings. The grounds are most beautiful and the baths invigorating. The hotel has 600 guest rooms and itself is more than a quarter of a mile long, extending in several directions. French Lick is, however, probably best known for the Pluto Water which comes from one of its springs and which is shipped in bottles all over the world.

The main line continues on from Orleans through Salem and around the hills known as the Knobs. This is majestic country which should be better known to the tourist. Just before reaching New Albany, we enter C. T. C. territory at Vernia. The control is from the K&IT's interlocking tower north of Youngtown yard in Louisville. Trains pass a very sharp reverse curve of 12 degrees, run for several blocks down a city street protected by highway traffic signals, and then climb up and over the K&IT bridge across the Ohio River. The K&IT, partly owned by the Monon, terminates Monon freight trains at its Youngtown yard just over the bridge; but passenger trains continue on several miles to the L&N station near the business district.

Louisville is probably best known for the horse racing at Churchill Downs. Cigarettes by such companies as Brown & Williamson and P. Lorillard, and furniture by such firms as Consider H. Willett, are manufactured here.

To the Monon, the most important connection in Louisville is the interchange from the Louisville & Nashville and Southern railroads. These companies have other routes, including the Pennsylvania, available to them for northbound traffic; yet Monon has always managed to receive a very good share of the Louisville-Chicago business from the south.

Since the Monon covers so much of Indiana, and all its owned lines are within the state, it is very appropriate that its equipment is now being lettered "The Hoosier Line." Informally the road has been a favorite of Indiana folk ever since it was built. This has been a great asset to the company in both good years and bad. Even where service has been poor, the friendly Monon is looked upon as being as much a part of the community as the courthouse square, and it is as much with love as with humor that the jingle was written:

Ireland must be heaven
'Cause the Monon don't go there.

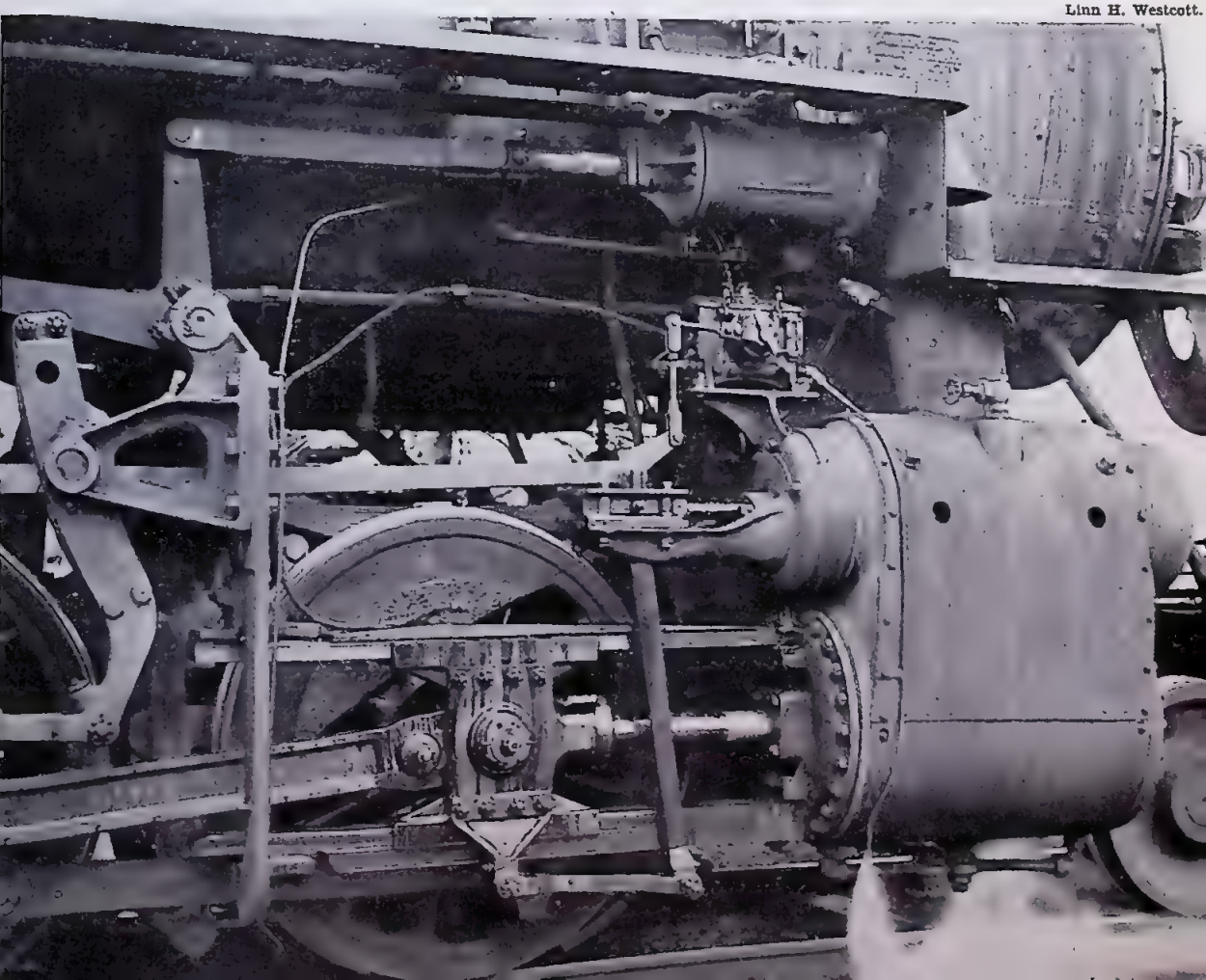
K&IT Bridge. Linn H. Westcott.

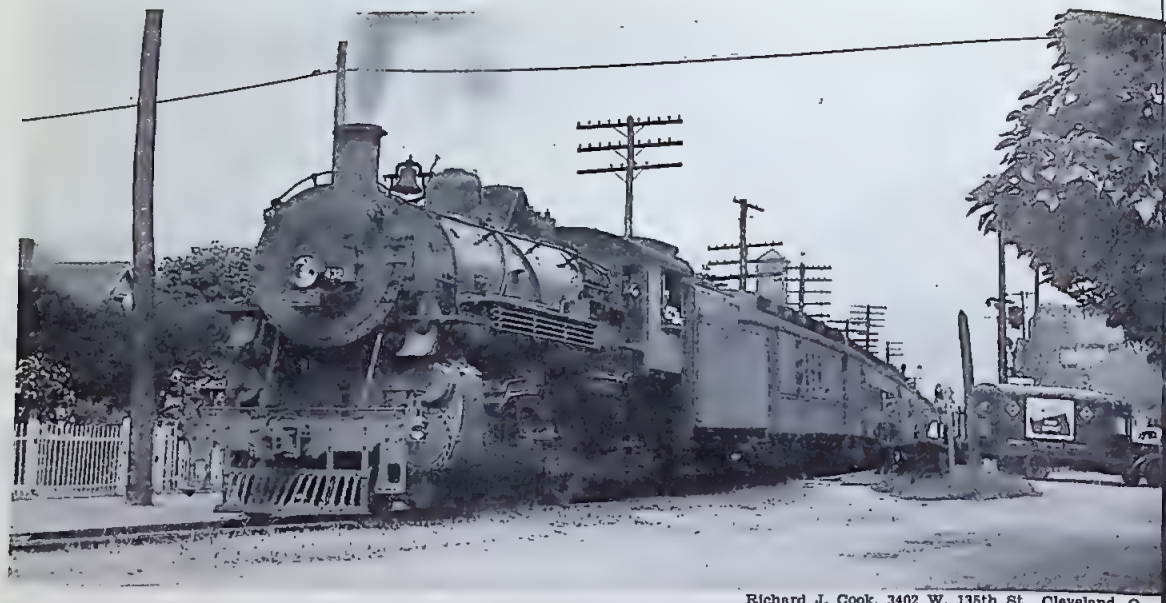
Linn H. Westcott.

PHOTO SECTION

The Monon Railroad begins at this special fishplate called a step joint. It joins the 112-pound C&WI rail on the left with 100-pound Monon rail. In a very few years Monon rail will also be 112-pound. The two heavy wires bridge electric current for the track circuit controlling signals. This was recently added when State Line interlocking was converted from detector bar to track circuit protection. Tie plates are used to prevent the rail from cutting into the ties. Valve gear of Monon engine 285↓ is the famous Walschaert type.

Linn H. Westcott.



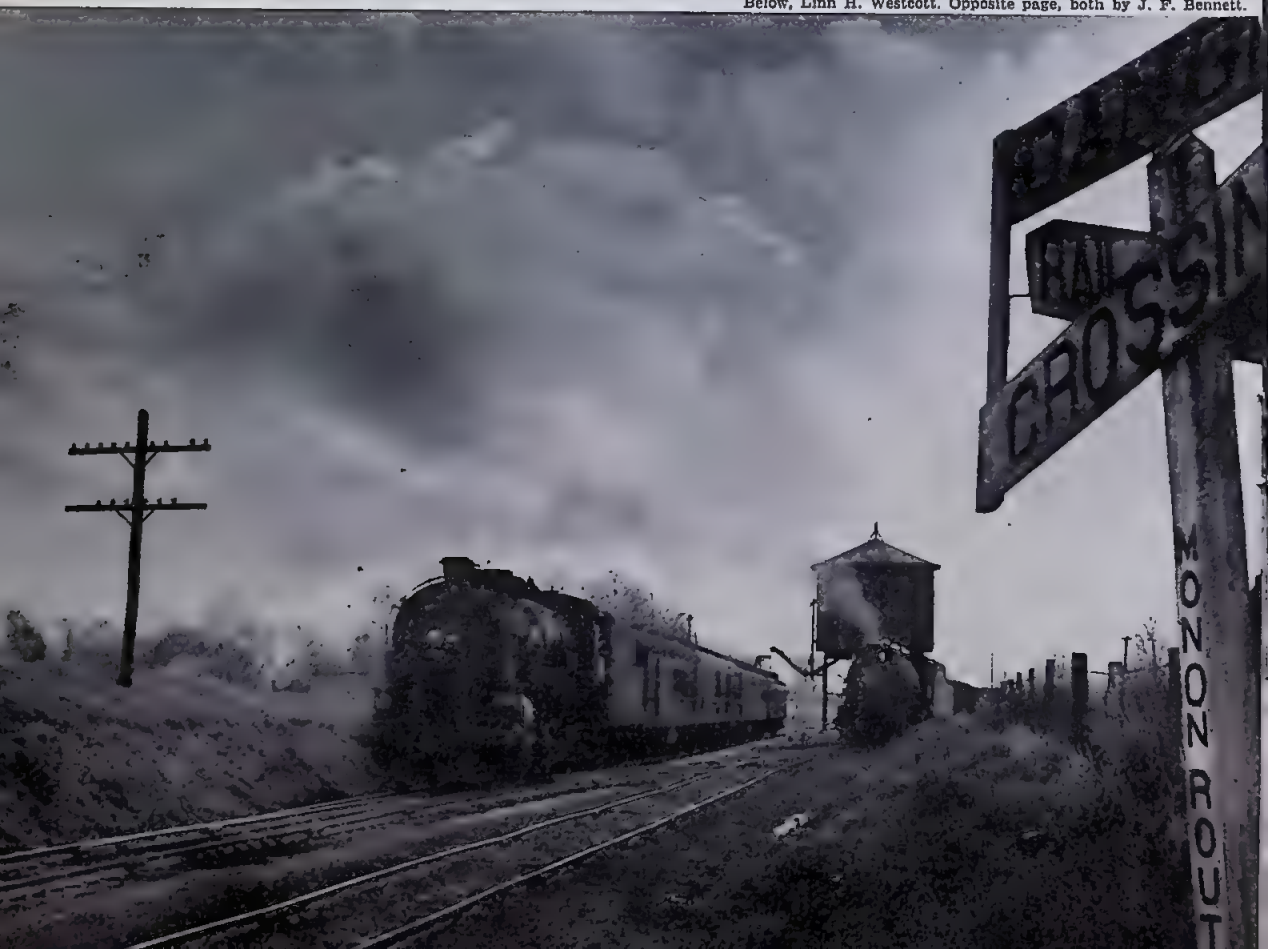


Richard J. Cook, 3402 W. 135th St., Cleveland, O.

Engines on Monon passenger trains are sometimes described as antiquated because they do not have all the added fixings found on modern steam engines. Soon trains like these at Frankfort↑ and Wallace Junction↓ will be replaced throughout with the latest equipment designs. Train in background at Wallace is a coal extra from Midland.

The rock cut one mile west of Harrodsburg (north by rail terminology) is an excellent spot for pictures. These→↘ were taken by a Monon man who sends fine pictures all over the country. Many photos in this issue were taken by members of Trains staff during Monon research trips.

Below, Linn H. Westcott. Opposite page, both by J. F. Bennett.



French Lick local northbound under highway 37 viaduct, Harrodsburg.

J. F. Bennett, 1112 N. College, Bloomington, Ind.

Linn H. Westcott.

Almost symbolic of the Monon renaissance is this bridge maintenance scene. The words MONON ROUTE are carefully brandished in pure white over jet black. This is the Middle Fork of Wild Cat Creek near Rossville. Like all bridges on the line to Indianapolis, it is getting a complete overhauling.

Linn H. Westcott.

Linn H. Westcott.

Upper: Northbound passenger speeds from a highway crossing at Creston. Although there is a mail crane, timetables do not list Creston, for there is no station or siding there. This line will be abandoned in a year in favor of a new location to the left which will eliminate Paisley Trestle.

Lower: Each freight car tells a story about the new Monon. Reporting marks have been shortened from C&IL to CIL; lower numbers will be assigned to new cars so paper work of yard clerks is made easier. The Hoosier Line slogan brings publicity while simple MONON lettering is easy to read.

Limedale← is where the Monon crosses the double-track line of the Pennsylvania's Vandalia route to St. Louis. The way freight in the distance is setting out cars for the cement plant. The plant chimneys can be seen at the far right. Two interchange tracks connect the roads here. Besides the interlocking frame↙, the tower contains a C. T. C. board for the Pennsylvania. Monon engines nose cars for the Pennsylvania up the eastbound interchange track↓ as far as it is clear. Limedale is on the southern outskirts of Greencastle.

W. C. Brandt.

A new shipper or receiver is always welcome on a railroad. This new switch and lead→ has been provided for a contractor at Saint John.

Linn H. Westcott.

Left and above, Linn H. Westcott.

All photos by Linn H. Westcott.

Monon maintains "target" signals to protect its crossing with Nickel Plate in Frankfort. Track in foreground↑ is merely a lead track from NKP engine terminal. It ends in a bumper about 300 feet to the right. Beyond Monon and NKP main in center of photo is the Monon local returning from spotting interchange cars on the wye. Local rounds the wye↙ to main line, then backs onto the train↘ ready for a northward dash to Delphi.

Diesels Pull the Monon Trains

Choice in motive power is based on a delicate balance between first costs and comparative operating costs over any given route

BY A. C. KALMBACH

You need a lot of horsepower to run a railroad. It is the measure of your ability to move traffic. In the old days, motive power men talked of tractive effort; but that was just the measure of what a locomotive could pull, and in the age of speed horsepower has become far more important. Horsepower is not only the pull of the locomotive, but how fast it can pull. Horsepower is tractive effort times speed.

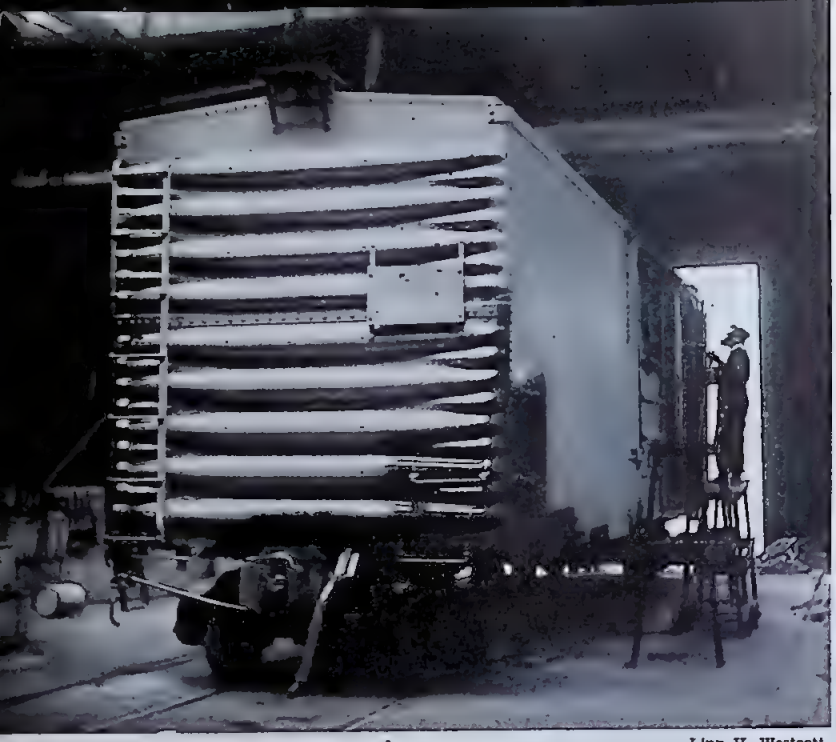
Suppose you are chief of motive power. You furnish the horsepower, of course. But you can furnish it with reciprocating steam locomotives, diesels, an electrification, or maybe even one of the new turbine or gas-turbine locomotives. Yours is the choice. Whatever you choose the trains will run, providing you have enough horsepower at the right division points. The only difference is that you may get fired if the horsepower costs too much. The board of directors and the boss will look over such intangibles as on-time percentage, smoothness of operation, and so on. Many things are hard to measure in dollars. But mainly you will rise or fall by the over-all cost of pulling the trains.

On most railroads the comparative costs of various types of motive power must be measured job by job. Will a diesel be better than a 4-8-4 to pull the *Limited*? What will cost least at the front end of the overnight fast freight? But the choice was much simpler on the Monon. The entire roster of steam locomotives had worn out. Every engine was either obsolete for present-day requirements of the road, or needed heavy repairs and modernization. The cost of required repairs would have paid a substantial down payment on any type of new power. The old steam power was not even a basis for any kind of cost comparison with diesels. The choice was between a complete replacement with new steam or diesel power.

Modern roller-bearing steam locomotives make at least 200,000 miles between classified repairs.

Dieselization on the Monon has proceeded in reverse from the usual order, the sleek streamlined road diesels such as No. 63 appearing first on freight trains while passenger trains still used steam. By the end of 1947 all power will be diesel.

Ball Photo Copy Lab., Lafayette, Ind.



Linn H. Westcott.

Linn H. Westcott.

The Monon's new passenger cars, converted from Army hospital cars, will look and ride like modern coaches↗. Workmen apply the new color scheme← at Shops. Interior↑ of a new coach.

Monon power, because of its design, was good for only 100,000 miles between sessions at the shops. Even the newest steam locomotives, a series of Mikados built in 1929, were not modern power. These 10 Mikes were purchased on a cost basis. The managers told the locomotive builders they wanted 10 locomotives at not over $80,000 apiece, and that's what they got. It was in an era when the engines should have cost half again as much. Instead of Mikes, Berkshires of higher horsepower could have been built. Instead of full roller bearings, five of the Mikes rolled on driver and trailer truck roller bearings, but their mileage was still limited by friction bearings on pilot and tender trucks.

You know, of course, that the Monon people chose diesel for their complete motive power replacement. Why? Let's go back to item 1: the cost of pulling the trains. With complete replacement all over the line, the diesels will have a greater cost advantage than they would on roads where they are mixed in with steam locomotives. Complete diesel operation means that coal and water facilities and steam locomotive repair equipment can be entirely removed. On a small road it means, too, that servicing costs can be cut simply because diesel service can be scheduled and spread over the working day to best advantage. A steam locomotive needs care and attention as soon as it's off the train. But a diesel can cut off the afternoon local at 4 o'clock and then sit and wait, without any attention at all, until the hostelers are ready to take it in charge. Recently, through special trains ran into French Lick Springs. Two had diesels, one a steamer. The diesels just stood, but someone had to watch the fire in the steamer all week end.

The diesel costs more per horsepower in the first place. It must go more miles per day to pay off, and this applies to the Santa Fe, New York Central, or Monon equally. On the Hoosier Line this works out all right because its diesels can make four or five complete round trips between Louisville and Hammond before they must be cut out for servicing. This ability to run more miles between servicings means that the Monon can concentrate all diesel service at one point, Lafayette Shops, near the center of the railroad. Eventually all fuel will be taken at this one point. The present diesel fuel tanks at South Hammond will be abandoned.

But how about the high first cost of diesel power? Even with less diesel locomotives doing the work, won't the cost of the locomotives be higher? Will it pay the Monon to buy excess diesels to protect traffic peaks instead of keeping a few steam locomotives for standby power? Frank Cheshire, operating vice-president, put it this way: "75,000 horsepower of diesels will handle 25 per cent more traffic than we could pull a year ago with our 160,000 horsepower of old steam locomotives. We figure 160,000 horsepower of modern steam locomotives could have handled this same traffic increase. Quantity production of diesels has improved the cost comparison of diesel power, and now I would say a steam locomotive costs about six-tenths as much per horsepower as a diesel. Multiply it out and you will see it actually cost us nearly one-fourth less to completely dieselize as to buy modern steam locomotives, so we can afford to have a reserve of diesel power for protection, same as a steam road keeps a reserve of steam locomotives for protection."

The decision to dieselize the Monon was made by the new management shortly after it took over in May, 1946. Frank Cheshire came to the road a year ago as chief mechanical officer because of his experience with diesel power as a master mechanic on the Missouri Pacific. It fell to him to carry out the change from old steam power to new diesels. He did this so well that he rapidly earned promotions to general manager and, just lately, to oper-

Linn H. Westcott.

ating vice-president. He and President Barriger make a perfect team for running a railroad.

Cheshire's first move was to stop classified repairs on steam locomotives last August. There's no need putting a lot of money into repairs on locomotives which are being replaced. You simply use each locomotive up to the limit of its maintenance and arrange that enough diesel horsepower is on the job so the worn-out steamer can be abandoned. Of course, steam locomotive repair costs dropped abruptly last August, and with the brand-new diesels the road has reported an enviable, but deceptive, repair cost per mile during the past 10 months. Some months have run as low as 27.7 cents a mile. Considering the age of the locomotives this looks like sleight of hand, and it is. When the last cent of reserve maintenance is squeezed out of the then abandoned steam locomotives, and the diesels have worn off their factory newness, Cheshire expects to report about 32 or 33 cents a mile in an average month.

Repair cost is one of the big items in locomotive operation. Modern steam locomotives might well be maintained for less than diesels. Fuel is another big item, and here the diesel has an advantage. But the railroad will save real money by the elimination of dozens of water spouts and coaling chutes.

Typical of the changeover is the program at Shops, the system's mechanical center just north of Lafayette. The roundhouse will be torn down late this year. It will be replaced by four service tracks, including a brush tunnel for washing the diesels and fuel and water hoses. The new diesel repair tracks in the existing locomotive shop building are elevated above floor level, so that men can work on trucks from floor level, or on cab and engines from a cab floor level platform. Materials and supplies are trucked to any part of either level over a system of ramps. The traveling cranes, which have lifted many a steam locomotive off its drivers, are now hoisting diesel engines out of cabs.

At the north end of the line, South Hammond, the coal and water stations will go this year. Next year the roundhouse will be torn down, and even the turntable will be removed if a suitable wye can be worked into the yard layout. The sandhouse won't be needed, for all diesels will go through Lafayette often enough to take sand there. Cinder pits, coal chute tracks, and cinder pit tracks add to the list of retirements at South Hammond. And so it goes down the line. Roadway property valued at more than $1.6 million will be retired in 1947, 1948, and 1949, largely because of the dieselization.

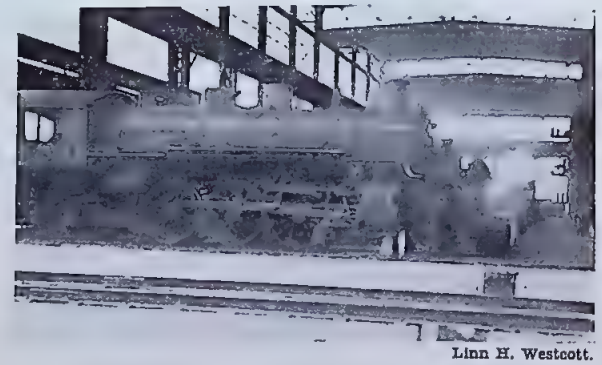
It's a completely different way to run a railroad. Even the organization is different. The motive power department will be much more closely integrated with the operating department after dieselization. The diesels will run right through and that means some of the freight train operating practices will be changed. The

Linn H. Westcott.

Soon to be dismantled is the roundhouse→ at Michigan City. Many such structures will serve no useful purpose after dieselization is complete. All maintenance will be done at Shops.

W. A. Akin Jr.

W. A. Akin Jr.



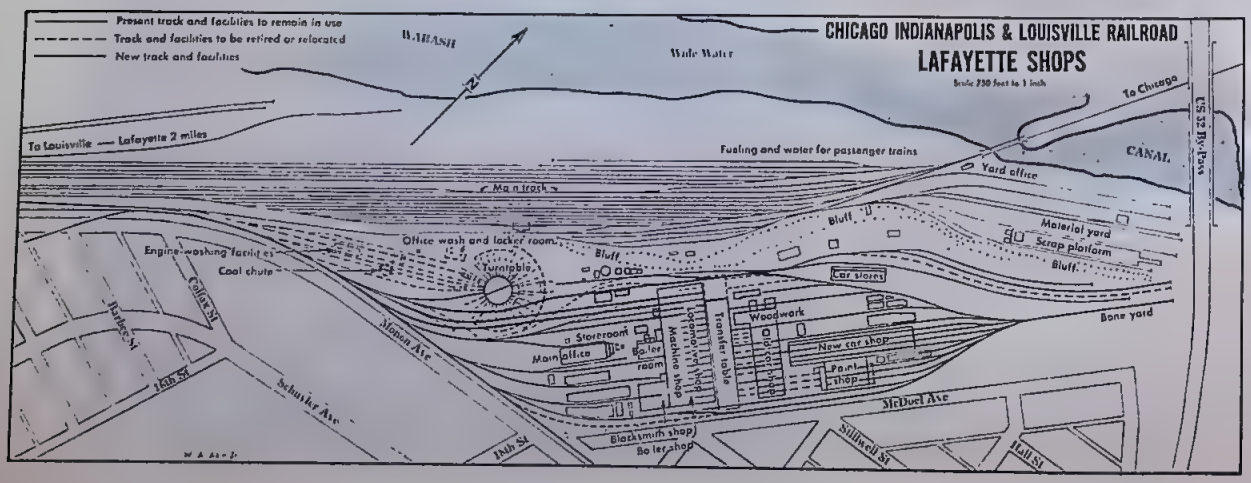
Linn H. Westcott.

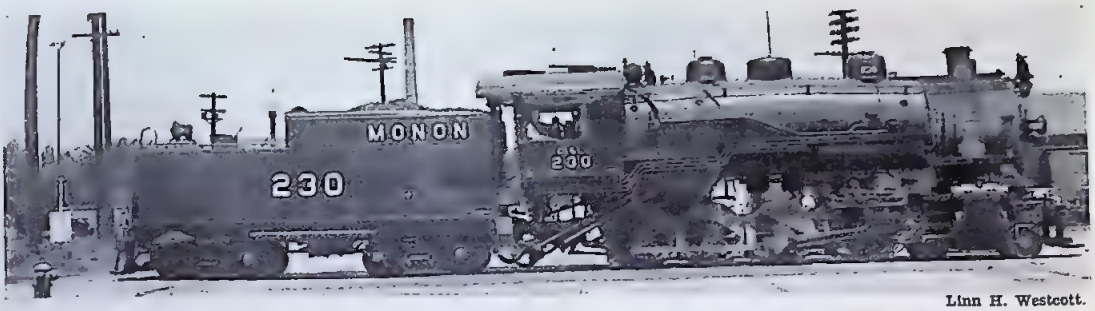
In the early days of the Monon the Michigan City branch was the end of the main line, and the turntable↗ there was a busy one. Today it turns two or three engines a day. The railroad's shops→ north of Lafayette (known simply as "Shops" on the employees' timetable) are capable of making all necessary repairs on steam locomotives, including heavy repairs and rebuilding. This building is being converted to diesel use; track in foreground is over a diesel inspection and maintenance pit. The conversion of facilities is proceeding at about the same rate as dieselization of the railroad. The old roundhouse (not shown) will be torn down after it is no longer needed. A workman operates a planer↑ at Shops.

high horsepower of the diesels at low speed will, in effect, level out many of the Monon's stiff but short grades and eliminate helpers and reswitching of trains to fit tonnage restrictions. All in all, it's such a different way to run a railroad that you just can't make simple cost comparisons. But President Barriger and Vice-President Cheshire are both confident that when all the debits and credits are added up, the Monon will show a very considerable operating saving by its use of diesels. They won't be guessing, either. Operation Accountant E. C. Dahl is charged with producing statistics detailed enough so that they are more than history. On the Monon figures come through promptly enough, and in the right detail, to guide today's operations and show how performance can be improved tomorrow.

Cars are just as important an item of equipment as locomotives. Your railroad needs enough passenger cars to take care of regular schedules, plus holiday and excursion peak traffic. It needs enough freight cars to care for its normal traffic. Of course, you use cars owned by other railroads and pay for their use on a per diem basis. But unless you own cars you can't depend upon supplying your on-line shippers when the car supply is tight.

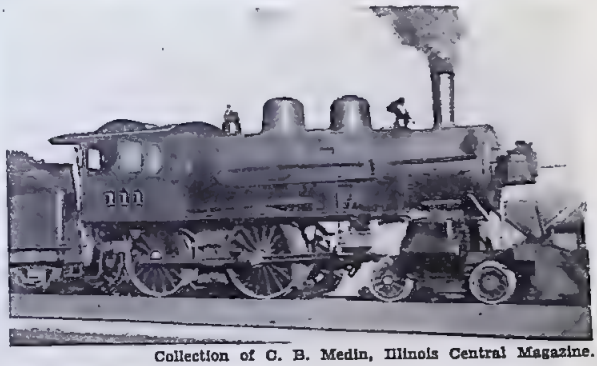
If the Monon's locomotive situation was bad when the present management took over last year, the car roster was even worse. The road had been working itself out of the passenger business. Only one train was running each way over the main line between Chicago and Louisville, with a connection to Indianapolis. John Barriger expressed his faith in





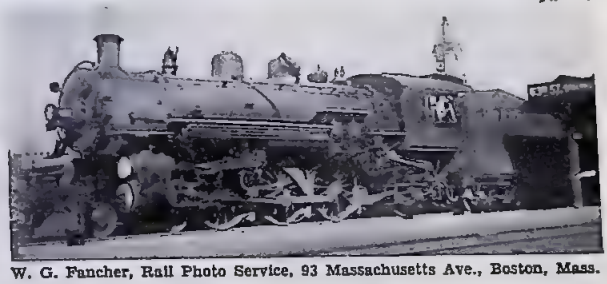
Linn H. Westcott.

Collection of Ora Calhoun, Lafayette, Ind.



Collection of C. B. Medin, Illinois Central Magazine.

Engine 230↗, a 4-8-0, is shown at Michigan City in 1946. Eight-Wheeler 111↗ looked like this in 1907; later she was renumbered 80. Pacific 413↑ is shown at Lafayette; 431→ is at Englewood. Under the Monon's new numbering system, no locomotive number will be larger than two digits; neither will passenger car numbers. No freight car number will have more than four digits — unless the railroad grows to the extent that it actually has enough cars to warrant more digits. Freight car No. 1 will be a new box car.



W. G. Fancher, Rail Photo Service, 93 Massachusetts Ave., Boston, Mass.

Monon Steam Locomotives

Number	Number Owned	Whyte Symbols	CIL Class	Builder	Average Age, Years	Cylinder Size, Inches	Driver Diameter, Inches	Weight on Drivers, Pounds	Total Weight Engine and Tender in Working Order, Pounds	Steam Pressure, Pounds	Tractive Effort, Pounds	Tender Capacity, Coal, Tons	Tender Capacity, Water, Gallons
30, 35	2	0-6-0	B-8	Brooks	40	20 x 26	51	142,000	260,000	200	34,670	6	5000
37-39	3	0-6-0	B-9	American	23	23 x 28	57	191,000	361,000	200	44,200	15	8500
111	1	4-6-0	G-2-B	CIL Shops	23	19 x 24	51	134,000	313,000	200	28,900	13	7500
224, 229	2	4-8-0	E-1-A	CIL Shops	22	21 x 26	55	153,000	320,000	200	35,450	8	7000
222-231	5	4-8-0	E-1-B	CIL Shops	21	21 x 26	55	156,000	324,000	200	35,450	8	7000
281-286	4	2-8-0	H-6	Brooks	35	22 x 30	57	191,000	361,500	200†	43,400†	15	7000
410-413	3	4-6-2	K-2-A	Brooks	30	21½ x 26	63	137,000	384,000	200	32,400	16	7400
420	1	4-6-2	K-3	Brooks	37	22 x 28	73	135,000	245,100	200	31,600	16	7400
430-432	3	4-6-2	K-4	Brooks	35	23 x 28	73	143,500	381,800	200	34,500	16¶	7400¶
440	1	4-6-2	K-5	Brooks	34	23 x 28	73	147,500	389,000	200	34,500	16	7400
443-445	3	4-6-2	K-5-A	Brooks	23	23 x 28	73	149,000	427,000	200	34,500	17	9900
451-452	2	4-6-2	K-6	Brooks	30	26 x 28	73	179,000	464,500	190	41,800	19	8500
501-524	13	2-8-2	J-1	Brooks	34	28 x 30	63	218,000	464,000	185§	58,700§	15	8500
525-527	2	2-8-2	J-1	Brooks	28	28 x 30	63	218,000	464,000	185	58,700	15	8500
530-532	3	2-8-2	J-1-A	Brooks	23	28 x 30	63	218,000	460,000	185	58,700	15	8500
550-554	5	2-8-2	J-2	American□	28	26 x 30	63	220,000	477,400	200	54,700	16	10,000
560-565	6	2-8-2	J-3	American	20	27 x 32	63	247,500	507,000	200	63,000	16*	10,000
570-579	10	2-8-2	J-4	American	17	27 x 32	63	258,500	565,500	220	69,240£	20	13,000
604-607	3	2-10-2	L-1	Brooks*	31	28 x 30	57	278,500	430,000	190	66,700	15	9500
Total	72				27								

†Locomotive 286 — Steam pressure 190 pounds, tractive effort 41,200 pounds.
¶Locomotive 431 — Tender capacity 16 tons coal and 10,000 gallons water.
§Locomotive 521 — Steam pressure 170 pounds, tractive effort 53,900 pounds.
*Locomotive 604 built by Schenectady. □ USRA light.
*Locomotives 561 and 564 — Coal capacity of tender, 19 tons.
£With booster, 80,740 pounds.

passenger service and his intention of restoring the night train to Louisville and through service between Chicago and Indianapolis. But when he looked around for the cars to do this, he found some Monon coaches were scattered around the country in troop train service. Others were in bad order. It took a couple of months just to get Indianapolis' beloved "5 o'clock Monon" back on the afternoon run, and it took still longer to reinstate the night Louisville train.

Only four of the Monon's old coaches are all steel. The other eight are of composite construction. Of the 22 other passenger train cars owned last year, only 14 are all steel. The composite cars average 40.6 years old. This was hardly a basis for the kind of passenger service Barriger intended to run. But last year, and even now, brand-new passenger equipment is strictly a waiting list affair. The Monon, at the bottom of the list, could expect to wait for a couple of years.

"There must be a quicker way," said the Monon people. And they found it. They purchased 35 army surplus hospital cars, only three years old and of clean streamlined exterior appearance. The all-steel construction is a bit heavier than usual lightweight cars, due to wartime restrictions on alloy steels. Trucks are six-wheel, matching the weight and giving a smooth ride. In the short Monon trains the excess weight will be no trouble.

The shops at Lafayette are rebuilding these cars into various types of interior, including coach, dining-bar-lounge parlor-solarium, baggage-express, mail-baggage, and baggage-grill-coach. The Monon feels that professional advice can be as valuable to a small road as to a big one, so it paid Raymond Loewy a fee for styling, and the new passenger cars will have a decorative scheme second to none. The exterior livery of gray and maroon is one of the most distinguished color schemes on American mainline rails. The first of these cars will be in service this month, a full year ahead of earliest possible new car delivery. In every way except weight, they are fully equal to brand-new equipment. Cost? About half as much.

Freight equipment was in as bad shape as passenger a year ago. This was despite the fact that the old management had no intentions of going out of the freight business. The roster listed a nominal ownership of some 2800 cars, but more than 1000 of these were in no condition for actual use. Orders were placed in jig time for 500 box cars, 100 hoppers, and 100 covered hoppers. The on-line plant of Pullman-Standard at Michigan City got the bulk of the business, and Michigan City heard of it. Perhaps for the first time in a decade Michigan City realized the Monon rails came within its limits.

Again ingenuity and the Lafayette shops did a job. The limestone business down around Bedford was in need of more equipment, especially since Barriger had put on a special stone local to encourage stone business on the Monon. So 107 old cars with serviceable frames were rebuilt into low side gondolas suitable for quarry to mill stone hauling. Specifications are out for quotations on another 200 box cars and 200 low side gondolas.

By the end of the year the Monon will own 2276 freight cars. This is 506 cars less than it owned a year ago, but every one of these cars will run. Bad order cars which are beyond repair have been ruthlessly scrapped.

The series of box cars just delivered from Pullman-Standard is numbered from 1 to 500. It is a radical, and yet simple, departure in car numbering. Barriger was once a yard clerk and he knows how many times each car number must be written, phoned, or teletyped during its travels. He sees no reason why a railroad must use big numbers on cars either for classification or for public appearance. "The numbers are to use, and we'll make 'em as easy to use as possible," he says. The same simplicity of numbering will be extended to every class of equipment, locomotives and passenger cars as well as freight cars.

The steam locomotives which pulled Monon trains for so many years may scatter to the Soo Line and the Tennessee Central and sundry junk yards, but they will be remembered. Efficiency is one thing; personality is another, and no one has yet claimed for the diesel a personality to match even the ugliest 0-6-0.

Like most railroads the Monon had its favorite locomotive builder. The biggest share of the roster came from the sprawling Brooks works in Dunkirk, N.Y. Even after Brooks was no more, the Monon orders went to Alco, which had absorbed Brooks. A few Ten-Wheelers and the unusual Twelve-Wheelers were built in the road's own shops at Lafayette.

The list of locomotive types is typical of any road as of about 1920: Pacifics for passenger work, Mikados for freight, and a few assorted switchers and other light engines for miscellaneous uses. The four-wheel trailing truck, that development of the late twenties which so greatly increased the horsepower of steam locomotives, just never did make its appearance on the Monon. Neither did high steam pressures, roller bearings all around, or other marks of the modern steam locomotive.

So the Monon was left with interesting locomotives to look at, the sleek cap stacked K-3 Pacifics, the hefty looking J-4 Mikes with their outside bearing pilot trucks, and the brutish Santa Fes that worked in the coal fields. But they couldn't perform. They didn't have the steaming capacity to deliver both high tractive effort and high speed. They didn't have the lubrication for long runs. Even the best of them were no match for the rolling grades of the south end of the road.

Helpers and doubleheading were commonplace. Train performance was erratic. Locomotive repair costs soared. No wonder the Monon needs completely new motive power. Perhaps a stud of new steam locomotives 15 or 20 years ago might have kept the road out of receivership.

When the diesels are all on the job one lone steam locomotive will still chuff contentedly around the Monon sidings in New Albany where the road was born 100 years ago. It will be an 0-6-0 switcher that works only one shift a day and can be serviced in the K&IT roundhouse in Louisville. Even a brand new diesel switcher can hardly beat that combination.

The Railroad Is a Factory

Unlike other industrial plants it cannot build an inventory of its product, so it manufactures transportation to meet the daily demand

BY WILLARD V. ANDERSON

The operating department of a railroad is somewhat analogous to the production department of a factory, in that it manufactures transportation. But one basic difference distinguishes railroad operation from factory production. A well-run factory produces goods in advance of demand, utilizing warehouses to meet fluctuations in the consumer market. A railroad, on the other hand, must produce transportation as it is needed. Unlike tangibles such as radios and washing machines, transportation cannot be stored against future requirements.

Railroads can, of course, and sometimes do, level out peaks by carrying over excess traffic from one day to another. But in this day of keen competition such a course is a step toward bankruptcy. The shipper is paying for, and has a right to expect, prompt delivery. While he may overlook a slight delay in an emergency, he expects delays to be the exception rather than the rule.

Thus the railroad operating department must keep posted on traffic conditions and knowing the conditions, must manufacture enough transportation to meet them.

On the Monon the responsibility for keeping traffic flowing rests with Superintendent C. C. Shoulty. Besides keeping his regularly scheduled trains moving expeditiously, he must be prepared to run extra cars or whole trains when traffic demands them. He gets his cue from the company's traffic department. Typical of such extras are holiday trains to handle home-going students from the seven colleges and universities served by the Monon. Special events such as the Kentucky Derby at Louisville require as many as five night-running trains. Fluctuations in freight traffic may require adding extra trains or annulling a train.

Shoulty, seasoned by 46 years' experience on the Monon from water boy to superintendent, knew what to do when John L. Lewis proclaimed a period of mourning at all coal mines following the recent Centralia disaster. He immediately cut off the flow of empty cars to the strip mines on the Monon, but anticipating that the strip mines would not be closed by the "safety shutdown" which followed the period of mourning, he had cars on hand to take care of the business when the strip mines reopened.

From his office at Lafayette, Shoulty schedules his freight trains so that, with rare exceptions, all freight on the line today will be delivered before the same time tomorrow, whether it originates on the Monon or whether it is "bridge" traffic between connections with other railroads. This is a new feature by which the Monon is showing a consistent gain in carloadings. Previously it was Monon practice to hold freight at the terminals until 69 cars were ready to move. Now the scheduled freight trains move on time regardless of how little tonnage they may carry. But they don't carry small loads because shippers have already become aware of the new policy and are shipping more via Monon.

Shoulty gives his orders to Division Trainmaster D. H. Dietrich in the opposite corner of the building at Lafayette. Dietrich has a capable relief man in the person of H. C. Douglass. Douglass was on duty the day I dropped into the trainmaster's office in the white-painted brick building at Fifth and Salem, alongside the Monon tracks. The division trainmaster is actually the chief dispatcher, and is so called on some railroads. He lines up motive power and the movement of cars, following the outline given by the superintendent, and has supervision of the trick dispatchers and of station agents and operators.

Leading from the trainmaster's office are three offices housing a telegraph operator and two trick dispatchers who cover the entire railroad in two subdivisions. Most operations are by telephone but telegraph is used on the "Air Line" from Monon to Indianapolis, the Michigan City branch, and the I&L branch to beyond Midland.

Trick Dispatcher B. R. Franks, working the Southern subdivision, relates the story of the general manager who once tried to tell a dispatcher what move to make in order to avoid a tie-up on the line. "Get back to your office and don't bother me!" snapped the dispatcher. "I'm running this railroad!" The irate general manager demanded that the superintendent fire the dispatcher.

"All right, if you say so," said the superintendent. "But remember, he told you the truth. He actually is running the railroad." The man was not fired.

Sitting alongside Franks watching over his shoulder and listening to his conversations with operators as they call in to report trains past their stations, it soon becomes apparent that the dispatcher in truth is the man who runs the railroad. If the line were run entirely by timetable rights, all would go well as long as every train was on time and there were no extras. But the minute one train slips behind schedule, many another train on the railroad would be delayed if it were not for the supervision of the dispatcher sitting at Lafayette. You

might say a dispatcher is a trouble-shooter.

While I was there with Franks, No. 6, the northbound *Day Express,* was reported on time when it arrived at Crawfordsville, 30 miles south of Lafayette. But that day happened to be publication day of *Better Homes & Gardens,* which is printed in the big Donnelley printing plant near by. Truckload after truckload of magazines to be shipped by mail and express greeted No. 6 when it arrived. As a result, the train was made 15 minutes late.

This was not too serious as far as Franks was concerned, for No. 6 did not have any scheduled meets with other trains for the rest of the way to Shops north of Lafayette, where the Southern subdivision ends. But Franks knew there was a meet scheduled on the Northern subdivision at Brookston, 12 miles up the line. Here No. 73, the southbound through freight from Chicago to Louisville, was scheduled to meet the northbound passenger train at 3:02 p.m. It was 2 o'clock as No. 6 left Crawfordsville. "You can have 15 minutes on 6," Franks called to B. M. Dill, the Northern dispatcher. This just gave Dill time to call the operator at Reynolds, the next telegraph station north, to issue an order changing the meet to Ash Grove, six miles closer to Lafayette. The same order was issued to No. 6. Thus No. 73 was not delayed.

Franks seemed not a bit perturbed when the telegraph key began clicking. He reached for his train consist sheet and started listing the consist of No. 72 as sent by the operator at McDoel. During the lengthy transcription he was called by other operators over the loudspeaker phone, carried on conversations with them and continued to decode the consists without missing a car. Consists of trains are sent to the dispatcher as they leave the yards, together with the destinations of various cuts of cars, so that the dispatcher knows just what work must be done by each train. All trains are made up into blocks at the yard so that only one setout is required at each destination point, regardless of the number of cars involved.

On the yard-wide train sheet spread out on his desk, Franks marked the arrival and departure time of all trains as they passed stations and towers. This information was phoned in by the operators. At the top of each column were listed the train number, engine number, and names of the crew members. Alongside the first time entry, as trains left their terminals, he listed the number of loaded cars, the number of empties, and the tonnage of the train. Thus, at a glance he could tell what trains were on the line, where they were, and what their consist was.

The dispatcher's duties are many and varied. He receives a report of a bad-order signal, and sends out a maintenance man to fix it. An operator calls in to report a pump out of order at a water tower and that the tank is empty. To prevent a boiler explosion due to insufficient water, the dispatcher informs all train crews that this particular tank is empty and that they must stop at the preceding tank if they have insufficient water to carry them to the next.

Out on the line are the dispatcher's assistants, the operators who keep him informed as to train movements past their stations. Usually, in the smaller communities, the operator is also station agent, and he not only sends railroad messages and Western Union telegrams but sells tickets and keeps in touch with local shippers as well. Such a station is the one at Monon, crossroads of the CI&L.

W. V. Anderson.

Dispatcher B. R. Franks telephones a train order while he writes the order in the book. Beneath the order book, spread out on the desk, is the sheet on which he records the movements of trains. Outside, No. 6 crawls past the office building at Fifth and Salem, in Lafayette. It is just leaving Fifth Street.

W. V. Anderson.

Station Agent M. W. Meredith doubles as first trick operator at Monon. His trick was over when I walked into the gray limestone station building in the triangle formed by the tracks of the main line and its two branches. On duty was Fred Thompson, who explained that he had to perform a few of the agent's functions, such as selling tickets, but that Meredith did the bulk of the agent's job during his daytime trick.

Monon, from the railroad standpoint, is a busy place. It has its own roundhouse where it keeps two locomotives overnight. Forty to 80 cars of freight are transferred daily at Monon, which sees 28 trains every 24 hours. Both U. S. mail and company mail are heavy through the little city, being dropped off trains from Indianapolis to be loaded onto trains on the Louisville line, and vice versa.

Here at Monon every train stops for a few minutes while the conductor signs the register sheet, giving train number, names of crew members, time in, time out, number of loads and empties, and tonnage. Main purpose of a register sheet is to inform the crews of trains that other trains which were supposed to have reached the register station ahead of them have indeed done so. This is very important at a junction point such as Monon. For instance:

No. 72, the through freight from Youngtown (Louisville), is scheduled to meet No. 15, the Indianapolis-bound *Hoosier*, at Monon at 6:54 p.m. Suppose No. 72 is five minutes late. According to the timetable, No. 15 arrived at Monon at 6:54 and left at 6:58. Presumably, then, the line from Monon to Chicago is clear at 6:59. But railroads are not run on presumptions. As No. 72's conductor signs the register he scans the previous entries and finds that No. 15 did indeed leave on time. It's safe for No. 72 to occupy the Chicago line. But had No. 15 been running late as well as No. 72, the northbound freight might have arrived late but still be ahead of the southbound passenger train. In this case No. 15 would not show on the register and 72's conductor would keep his train clear of the Chicago line until 15 passed.

Register stations are necessary wherever trains enter a main line from another main line or from a branch or yard. Monon has register books at South Hammond, Monon, Belt Junction, Indianapolis Union Station, Michigan City Roundhouse, Shops, Midland, Wallace Junction, McDoel, Orleans, and French Lick.

The transmission of train orders is well tangled with red tape as a safety measure. The issuing dispatcher must write the order in a book as he telephones or telegraphs each word simultaneously to all operators involved. Engineers and conductors of all affected trains are addressed, and each receives the message in identical words to avoid double meanings. After the dispatcher has finished sending the order, the operators repeat it back to the dispatcher, who underscores each word of the original message as written in his book. The operator, in receiving the order, makes as many carbon copies as are required, one for each person addressed at his station. If the required number of copies cannot be made at one writing, he must make additional copies and repeat the order back to the dispatcher each time copies are made.

Train-order signals, the twin semaphores or lights seen over the bay window of almost every station, are normally left in the "stop" position while an operator is on duty. If he has no orders for an approaching train, he changes the signal to "proceed" and immediately restores it to "stop" after the train has passed.

When no agent is on duty the signals are normally clear. At terminal stations, such as Monon, a train cannot proceed without a "clearance card" from the operator. This clearance, addressed to the engineer and conductor, specifies how many orders the operator has to deliver to the train, and gives the train order numbers. The clearance card accompanies the orders themselves, and the trainmen must compare the numbers of their orders with the numbers listed in the clearance to make sure they have received all the orders intended for that particular train.

All these precautions, and many more besides, are taken to assure the safety of trains. The first sentence in the book of rules reads, "Safety is of the first importance in the discharge of duty." No amount of red tape can be too complicated when it is considered how many lives depend upon absolute co-ordination of trains.

High in a newly painted wooden tower at the intersection of the

Accustomed to thinking of the Monon as a small railroad, the average first-time visitor at Shops← is amazed at its sprawling size until he realizes that the difference between large and small lines is not in the size of facilities, but the number of them. No. 6 passes Shops yard office↓.

Linn H. Westcott.

Linn H. Westcott

W. V. Anderson.

No. 12, the Tippecanoe from Indianapolis to Chicago, pulls out of Monon station↗. On the platform trucks in the foreground are bags of mail awaiting transfer to No. 5, the Day Express to Louisville. Brick hotel↖ fronts on the railroad and has no direct access to street. Spherical tank holds city water.

Some commodities, such as coal, require weighing, and railroads maintain track scales at strategic points. Such a point on the Monon is Wallace Junction, where the Midland branch to the Indiana strip mines joins the main line. These pictures, taken at Wallace Junction, show the weighing of a trainload of coal from Maumee 28 mine. In order to facilitate spotting of the cars, a brakeman← stands beside the scale and signals the engineer. Stone pile also helps. The man inside the shanty↙ records the weight of the individual cars as they are backed over scale.

Both photos, W. V. Anderson.

Monon's Midland branch with the Big Four (NYC) at Clay City is one of the few Monon-operated interlocking plants. In all there are 23 interlockers on the railroad, but most of these are operated by the intersecting lines which were built after the Monon. The new road at a crossing is usually responsible for tower management. Towerman C. E. Tatum looks down over the Monon and Big Four rails and controls the movement of trains over the Clay City crossing.

It's a small plant, as interlockers go. Only two single-track lines are involved, requiring only 16 levers: four to operate the distant signals, four for the home signals, four for derails, and four for the locks. Four other levers are not in use, and there is room on the frame for four more. Both lines are normally kept blocked, a clear route being set up only on approach of a train. A timing device prevents the setting up of a new route while a train is proceeding across the diamond.

Because only three or four Monon trains daily use the Midland branch, and these only during the first two tricks, the second trick towerman sets up a clear route for the Big Four when he leaves the tower. Should an extra Monon train approach the crossing during the third trick, the engineer blows his whistle to awaken the towerman in his home in the near-by village. The towerman comes back to the tower and lets the train through. Big Four trains run through the night, the normal number of trains through Clay City being 14 a day. Neither the Big Four nor the Monon runs regular passenger trains on these lines. Traffic is primarily coal.

Towerman Tatum's duties are those of an operator as well as leverman. He records and reports the passage of trains to dispatchers of both railroads, delivers train orders to both lines, and watches, as does every railroad employee, to see that passing trains are in good condition.

Because there was no passenger traffic through Clay City, the Monon closed its station during the depression and Station Agent B. H. Sipple moved his office to the interlocking tower. Here, in cramped quarters with hardly room for himself and Tatum, he

keeps his records, makes out bills of lading, and performs the other chores of the agent.

Monon trains through Clay City are not yet dieselized, but will be before the year is out. Only once has a diesel locomotive gone through the town. It was a road-switcher type which astounded the natives no end. Towerman Tatum enjoyed watching the amazed faces.

Before any train goes out on the road, it must be made up in a yard. Superintendent Shoulty's influence is felt even here, for it is he who outlines the general consist of trains. Actual supervision of the details is the bailiwick of the yardmasters at each yard. Blackburn Newton is on duty during the second trick at McDoel Yard near Bloomington.

Did you ever go past an empty yard and figure the railroad wasn't doing much business? That's a common misjudgment, Yardmaster Newton will tell you. Actually, an empty yard is evidence that traffic is moving, as it should, instead of being delayed. When freight moves from Chicago to Louisville in nine hours, as it does on the Monon, there is no time for layovers along the way. Train 71, for instance, has only two layovers of 15 minutes each while cars are inspected and crews changed at Shops and McDoel.

Yardmaster Newton supervises the movement of cars and the makeup of trains, sees to it that motive power is available, and assigns crews. Many crews have their regular runs; others are assigned from a rotary callboard which bows to seniority and yet sees to it that the "youngest" man does not starve while waiting for an assignment. When a temporary assignment is open on a regular run, as in case of sickness or other absence of the regular man, the oldest man (from point of service) on the extra board gets the assignment for one run. The next oldest man gets the next run, and so on until each person on the board gets a run, and then the cycle is repeated. If, however, the temporary vacancy becomes a permanent one, the oldest man has the first option of taking the assignment permanently.

Train crews consist of an engineer, a fireman, a conductor, and two brakemen, one at each end of the train. On some railroads the brakemen are designated as "head-end" and "rear-end" brakemen, but on the Monon a "brakeman" is the one at the front of the train and the one at the rear is called a "flagman."

Engineers, of course, operate the locomotive. This does not mean merely running a machine as you would run your automobile. He must operate according to the timetable and according to wayside signals as well as by signals from the conductor and by train order. If he's running a steam locomotive pulling a freight train, he must make slack in the train before he starts, so that the locomotive starts only one car at a time. If he's running a diesel, on the other hand, he must stretch out his train slowly to eliminate all slack before he starts. Otherwise the diesel, which has almost unlimited power and rapid acceleration at slow speeds, might break a train in half by snapping a drawbar. For the same reason, it is especially important that diesel-powered freight trains have

W. A. Akin Jr.

Resplendent in a new coat of paint, the box car-red and white interlocking tower↗ at Clay City glistens in a late afternoon sun. Train-order signal is set at "stop" for Monon trains; intersecting rails are Big Four. Towerman C. E. Tatum↘, who shares the tower with Station Agent B. H. Sipple, hopes the Monon improvement program will someday reach his somewhat leaning tower.

Linn H. Westcott.

all brakes off before starting.

The fireman, as everyone knows, tends the fire on a steam locomotive and keeps an eye on the water supply. He also watches the signals as a check on the engineer, and calls out the indications across the cab. On diesel assignments this is now his most important duty, although he must also make periodic inspections of the engines and keep tab on fuel.

A brakeman inspects the train before starting and keeps an eye on it while running. He looks for such things as dragging brake gear, hotboxes and the like. The flagman protects the train when stopped, walking a prescribed distance back to flag down any approaching train.

The head-end brakeman may be called upon to protect the front of the train, but this seldom happens. One such occasion arose recently when, on orders from the dispatcher, the head brakeman of a southbound extra freight rode the engine of the southbound *Day Express* in order to hold a northbound extra in a siding where there was no operator. With the brakeman thus protecting his extra against a head-on collision with the northbound train, the southbound extra could follow on the heels of the *Express* and avoid a 20-minute delay.

Originally, the two extras were supposed to meet farther up the line. The *Express* had developed a hotbox and was delayed, thus holding up both extras. Had the dispatcher been able to reach the northbound train by telegraph and rearrange the meet, it would have been unnecessary for the brakeman to protect the southbound train against the northbound movement.

The duties of passenger brakemen and freight brakemen vary in minor details, but their primary function in both classes of service is the same: protection of the train. Passenger brakemen are also required to assist passengers and to see that heating, lighting, air conditioning and other equipment is functioning properly. They also call out stations. Whenever two trains pass, the flagmen watch each other's trains for hotboxes and other defects and wave an O.K. signal as cabooses pass.

The conductor is the captain of the train. Not only does he collect tickets on passenger trains and keep a record of his receipts; he must also see that other train employees observe the rules and any train orders which might be issued. The duties of a freight conductor are much the same as those of a passenger conductor, except that he is dealing with bills of lading and cars instead of tickets and people.

Over the week end of May 2 to May 4 the Monon was confronted with the problem of supplying extra passenger transportation for the Kentucky Derby. Preparations were made far in advance, and mimeographed instructions were issued to all employees who would have anything to do with the special movement. First sentence of the special instructions was the standard "Safety must be of first consideration in the handling of these trains." That's typical of railroad thinking. Then followed a detailed statement of the duties of participating employees.

The special movement began at 11:05 p.m. May 2, when an extra train of four Pullman cars left Dearborn Station in Chicago as First No. 3. Five minutes later the regular No. 3 left, but that night she was known as Second No. 3, and in addition to her usual two sleepers, coach, and three head-end cars she also carried four more sleepers. She ran this way to Shops (Lafayette), where she dropped a sleeper and the three head-end cars, continuing on with only eight cars.

Third No. 3 left Chicago at 11:30 with 10 cars: eight sleepers, a diner, and a club-lounge car. She ran this way to Louisville.

Fourth No. 3 was made up at Lafayette from the four cars dropped off there by Second 3, plus a "buffer" car between the head-end cars and the sleeper. At Bloomington the buffer and French Lick sleeper became the regular No. 23 to French Lick, while the head-end cars continued south as Fourth 3, doing the regular head-end business.

All this, of course, involved extra problems for the operating department. Extra cars had to be provided, and extra locomotives, too. Extra train crews had to be organized. Dispatchers had to watch over four trains instead of one. Crews of opposing trains had to remain "holed up" in sidings until all sections passed, unless ordered to do otherwise by train order. Engines of First, Second, and Third 3 carried green light signals to indicate other sections were following.

Most powerful locomotive on all four trains was to be found on the fourth section. This was no accident. The J-3 freight locomotive on a three-car train was there ready to help in the event of engine failure of any of the preceding trains.

Besides these special trains, others were operated over the week end—for example, the Berry Derby Tour which was received from the B&O at Youngtown on the evening of May 3, after the Kentucky Derby. This 13-car train was taken to French Lick and delivered to the B&O at Mitchell the next morning.

That's how men manufacture transportation on the Monon. On other railroads the operations are similar but with variations to suit their own conditions. A multiple-track line, for instance, does not need sidings for meets because all tracks in addition to the first one are in reality long passing tracks extending the length of the railroad. Nevertheless, you may find both tracks of a two-track railroad occupied by trains going in the same direction. This allows a fast-moving train to pass a slow-moving one without delaying either. Crossovers at strategic points allow such moves.

Centralized traffic control is now being used extensively on many lines to increase track capacity and to decrease the need for train orders. Using this control system, a dispatcher flips switches in his office, and signals are set automatically many miles away. Monon will have C.T.C. soon.

Railroads with more traffic than the Monon have more operating problems, and railroads with less traffic have fewer. The general methods of solving these problems are basically the same, but just as the small-town storekeeper adds your list of purchases with pencil and paper, and the busy chain store clerk uses a calculating machine, railroads use simple or more complex means to keep the traffic moving.

The Growth of a Railroad

Like many another larger line, the Monon Route of today is made up of other companies whose properties were acquired through the years

BY EDWARD HUNGERFORD*

The citizens of brisk New Albany, upon the north rim of the Ohio River, were bound that they were going to have a railroad to the interior of Indiana. Ultimately, they planned, the rails would extend clear to the tip of Lake Michigan nearly 300 miles away. "The thing is impossible," chanted the croakers among them. "Who wants a railroad, anyway?" asked another group. "We are a river town," they said, "and steamboats don't ride on rails."

But James Brooks said nothing; he merely did a lot of thinking. He bided his time. James Brooks knew the situation. The ambitious young state of Indiana had been promoting large things — canals and highways and railroads, even — and had gone nearly bankrupt in the effort. James Brooks knew these things and proceeded to build upon them.

In 1845 that smart river town of New Albany was the largest city in Indiana, with 8000 inhabitants — and James Brooks was the biggest man in New Albany. He was State-of-Maine stock: shrewd, capable, resourceful. He had faith in New Albany, a lot more faith than he had in those huge white craft that forever were tying up to New Albany's busy levee with a great show of noise and commotion.

Steamboats, thought Brooks, forever were blowing up or burning up or getting themselves snagged somewhere along the river, and despite all their magnificence they could not go one foot overland. Indiana needed no more development along the bank of the Ohio; what Indiana needed was the development of the rich inland valleys of the Wabash and of the White, and the fertile flat prairie country far to the north. There lay Indiana's future, not in the temperamental river trade of the Ohio. Some day the Great Lakes would be the scene of a greater water traffic than would ever ride the sluggish, flood-ridden Ohio.

New Albany had had its troubles with the river. Chiefly these were to be attributed, it was felt, to that rival town which rested on the opposite shore, just above the Great Falls of the Ohio. Those Kentuckians talked too much about their Louisville. They said that some fine day Louisville, backed by the rich Blue Grass country, would completely eclipse Indiana's biggest town. New Albany did not believe that sort of talk. Nor did the town like it.

New Albany had its own rich back country — the pioneer state of Indiana need concede nothing to the older Kentucky, either in richness of soil or in mineral resources. And that was the reason why, at the very beginning, the progressive young Hoosier State had projected a comprehensive state-wide system of interior canals and highways and railroads.

A beginning had been made a decade before. Grading had begun on a macadam road out of New Albany toward Salem, 35 miles to the north. But within three years the plan had come to naught; work upon it ceased and the young state found itself saddled with a ripe debt of $13 million. It could borrow no more money and so, in 1842, Indiana found itself advertising that if private companies wished to take over and finish these public works they could do so, subject only to the right of repurchase by the state after 20 years.

Already there was a railroad in Indiana. From Madison farther east on the Ohio, well up the river above Louisville, the pioneer Madison & Indianapolis Railroad was reaching its rails up an incredibly steep hill in an endeavor to get through to the new state capital town on the White River. New Albany would have to bestir itself to keep pace with Madison.

James Brooks knew all of these things. And presently he was helping to organize the New Albany & Salem Railroad Company to take over the right of way of the New Albany-Crawfordsville macadam road already begun by the state. He became president of this new railroad which, according to its own notice, "$10,000 having been subscribed," was organized on Thursday evening, July 8, 1847, "at early candlelight" in the Lyceum Room in New Albany. A few days later Governor James Whitcomb announced the formal incorporation of the new railroad company.

The following year work was begun on the road. By 1850 stock subscriptions had come to $760,000; the first 20 miles of the railroad had been completed and contracts let for an extension on to Gosport, 113 miles from the Ohio. The following year found stock subscriptions raised to $1,260,000 and the line open and in operation through to Salem. Plans were being made to extend it from Gosport into Indianapolis, but a more immediate plan contemplated its construction right through to Michigan City on Lake Michigan, 287 miles from New Albany.

Thus began the building of the present-day Monon Route. As it left the valley of the Ohio, the

*Author's Note: I wish to express my indebtedness for many of the essential facts in this article to Professor Frank F. Hargraves' "A Pioneer Indiana Railroad," published at Indianapolis in 1932. — *E. H.*

New Albany & Salem bore off through hilly country sharply to the west. From Salem it went northwest to Orleans, where it later was to connect with the French Lick branch. Thence the main line of the NA&S went almost straight north through the western half of Indiana to Lake Michigan. It threaded fine pioneer towns: Lafayette, Bedford, Bloomington, Greencastle, Crawfordsville.

The railroad was completed to Orleans by January 1, 1852, but rough country was again encountered, greatly slowing the work. Bedford was not reached until April of the following year. Late that autumn trains from New Albany were running into Bloomington. Gosport was reached a few months later.

From Lafayette south to Crawfordsville, Major Isaac C. Elston's Crawfordsville & Wabash Railroad (soon to become a part of the New Albany & Salem) was under construction. Its first locomotive had arrived at Lafayette via the Wabash Canal in June, 1851, and was at once put to work; it was the first iron horse in the entire Wabash valley. The canal also brought the iron which (like that for the New Albany & Salem) was imported from England and brought up the Mississippi and the Ohio.

By water also came the first three engines for the New Albany & Salem, built by the Norrises of Philadelphia. At that time there were no railroads into Indiana from the East, and the small 16-ton *New Albany* (first of the three engines) was brought by canal and the Portage Railroad across Pennsylvania, and thence down the Ohio. These engines were wood-burners; their tenders carried three or four cords of wood for which the railroad paid about $1 a cord.

Cars were built by Keck & Davenport of Cincinnati, and the two passenger coaches cost $6000 each. At a later time the company established its own shops at New Albany and in these it built many freight cars and several locomotives. Eventually the shops at Lafayette took over the principal work.

Michigan City at the middle of the past century confidently expected to become a great city. Chicago, 40 miles to the west by water, already was larger and more important, but Michigan City people feared Chicago no more than New Albany feared Louisville. Michigan City had one of the very best harbors on all the far-flung lake, and the most southerly, while from the east the new Michigan Central was fairly racing its way west. Abundant Boston capital was behind the Michigan Central, and at its eastern terminal stood the swiftly growing city of Detroit. It would have abundant connection in the Great Western Railway of Canada, then being built westward from Suspension Bridge to Windsor, across the river from Detroit. The railroads of New York State were already connecting with the Great Western at its eastern end.

Michigan City was the original goal of the Michigan Central, but when its bitter rival, the Michigan Southern, began to build on to Chicago the Central revised its plans and decided to go there too. The Illinois city was preening itself to become the chief rail hub of North America. From it railroads already were preparing to spring across the flat Illinois prairie, to and across the Mississippi and the Missouri and then on toward the Golden West. Chicago was the real goal for any eastern railroad.

And it began to look as if the Michigan Southern would get there first. To make assurance doubly certain, the Michigan Southern and its ally, the Indiana Northern, were up to tricks with the Indiana legislature. The Michigan Central, swiftly pushing its way across the state of its nativity, came to an abrupt halt at the Indiana state line not far from Michigan City. Apparently it could go no farther. Spurred on by the Central's bitter rival, the Indiana legislature refused point-blank to grant it a charter to cross the state.

The small New Albany & Salem saved the day for the Michigan Central. The New Albany road had received a most generous charter from the state of Indiana which President James F. Joy of the Michigan road called "a roving charter." It permitted NA&S to put down lines anywhere it pleased within the state, without the necessity of going to the leg-

TRAINS collection.

islature for an extension of charter privileges. Therefore, the New Albany & Salem was in a position to enter into an agreement to build for the Michigan Central a line across the extreme northern portion of Indiana to the Illinois state line. The Michigan road already was assured of a connection and entrance into Chicago over the newly completed Illinois Central Railroad.

For this rather sumptuous privilege the prosperous Michigan Central paid $500,000 in the form of a stock subscription to the struggling New Albany & Salem. This gave the latter road an opportunity to finish its main stem from the Ohio to Lake Michigan by buying the Crawfordsville & Wabash, building the connecting link between Gosport and Crawfordsville, and then building the last link between Lafayette and Michigan City.

This contract between the New Albany & Salem and the Michigan Central (now part of the New York Central System) was finally ratified in 1851. It was fought bitterly all the way up to the Supreme Court of the United States by the Michigan Southern (today also a main stem of the NYC), but the New Albany-Michigan Central combination won. Months before the final decision in the hotly contested case had been announced, the railroad was already reaching across the sand dunes and waste lands of northern Indiana from one boundary line to the other. Work was speeded up on the new line and in the spring of 1852 Michigan Central trains ran into the stone Illinois Central passenger station on the lake front in Chicago just 24 hours ahead of the hated Michigan Southern.

For a time the New Albany & Salem had rather hoped that it might acquire that east-west line across Indiana from Michigan City to Hammond, but gradually these hopes faded. The little New Albany & Salem had about all that it could do, even with help from the Michigan Central, to build its line southward from Michigan City to Lafayette. Already it had been forced to abandon the project to build from Gosport on the White River up to Indianapolis.

The northern section of the New Albany & Salem was completed between Lafayette and Michigan City on October 3, 1853. By purchase of the Crawfordsville & Wabash in 1852, just 17 days after the C&W's completion, the NA&S already extended south from Lafayette to Crawfordsville. The only gap left in the New Albany to Michigan City route was now between Gosport and Crawfordsville. The interior of the state had received through rail connection with both Chicago and Detroit, and proceeded to make full use of it. The northern extension of the New Albany road passed through a rather sparsely settled district once it crossed the Wabash River at Lafayette. But the land was rich and level and only awaited rail transport to make it of large value agriculturally. Farmers moved in and villages sprang up along the line. One of these was Monon, named after the swift-running Little Monon Creek that passes near the station.

Work had already begun at both ends of the gap 56 miles from Crawfordsville to Gosport. Finally, at 4 o'clock in the afternoon of June 24, 1854, the two tracklaying forces drove the final spike which joined the rails near Putnamville, seven miles south of Greencastle.

The complete New Albany & Salem was opened early in July, 1854. The first through train passed over it on the third of that month, leaving Michigan City at 5 o'clock in the morning and arriving at New Albany a little after 9 in the evening. The following day saw the formal opening ceremonies. Thousands of folk came from up and down the Ohio to ride upon the railroad. Among them were the governors of Indiana and Kentucky.

The 1851 edition of the "American Railway Guide and Pocket Companion for the United States" shows→ one daily train in each direction between New Albany and Salem on the railroad of the same name, with additional service to Orleans, 20 miles from Salem. The fare was approximately three cents per mile. Shortly after its completion in 1874 the narrow-gauge Bedford & Bloomfield Railroad acquired a 2-4-0 locomotive↙ from Porter Belle & Company. This line became part of the Monon. Football specials in the 1920's were hauled by well-decorated engines↓.

NEW ALBANY & SALEM RAILROAD.

J. Brooks, Pres., New Albany, In. L. B. Wilson, Eng., New Albany, In.

Miles.	Fares.	N. ALBANY to SALEM.	1st Tr'n			Miles.	Fares.	SALEM to N. ALBANY	1st Tr'n		
		TRAINS LEAVE	AM.					TRAINS LEAVE	PM.		
		New Albany.	9 00					Salem.....	2 00		
10	30	Bennetsville.				12	35	Pekin.....			
18	50	Providence ..				17	50	Providence ..			
23	65	Pekin.....				25	70	Bennetsville..			
35	1 00	Arr. Salem...				35	1 00	New Albany			

This Road is now open to Orleans, 20 miles from Salem.
Stages leave Orleans on arrival of trains, for adjacent towns.

Trains collection.

At New Albany it was a memorable Fourth of July. In the morning there was the inevitable military parade from the Market House to the Cemetery Grove, where there was a banquet with 1300 ladies at the long tables, much shooting of cannon and playing of bands — and almost unlimited oratory.

Despite extreme heat, New Albany did herself proud. In seven years it had become the chief terminal of an important railroad — the first to cross the state — a railroad which had cost upward of $6 million to build and equip; no small enterprise it was, for those days.

It would be pleasant to record that the road went at once into real prosperity. Unfortunately, this is not true. The New Albany & Salem ran into many vicissitudes. Despite the fact that it was the first, and for a long time the only, rail link between the Ohio and Lake Michigan, and despite the fact that it passed through a land rich in lumber and minerals and superb building stone, it threaded but few large towns and had but few rail connections. The completion of the broad-gauge Ohio & Mississippi (now B&O system) from Cincinnati to St. Louis helped a bit, for it crossed the New Albany road at right angles at Mitchell. But the difference in gauges was something of a deterrent for through freight traffic.

The opening of the standard-gauge lines from Indianapolis to St. Louis, which intersected the NA&S at Greencastle, helped a lot. But the new Indianapolis & Lafayette (the present Big Four) was best of all. By it a through rail route was established from Cincinnati and the East, through Indianapolis, Lafayette, and Michigan City to Chicago. This was a route that swept into instant popularity and so remained until the completion by the Big Four some years later of a direct route of its own from Lafayette to Chicago via Kankakee, using its own rails and those of the Lake Erie & Western and the Illinois Central.

By 1857 the Kentucky & Indiana bridge was completed and trains could run into Louisville passing right through New Albany. Two years later the railroad was renamed the Louisville, New Albany & Chicago. In the days of the Civil War the Michigan City route became of great military importance. Despite occasional raids upon it by Morgan's men, great numbers of troops and large quantities of food and military supplies rode over it.

In an ensuing financial emergency the powerful Michigan Central came to the aid of the LNA&C, furnishing and operating freight and passenger trains as far south as Lafayette — for which it took a goodly share of the receipts. In fact, James F. Joy, president of the MC, for some time was receiver of the Louisville, New Albany & Chicago. Some time after the Civil War this arrangement ceased and the New Albany road again stood upon its own feet, albeit somewhat unsteadily.

In 1865 a great American was to ride the rails of the future Monon. Yet he was to see nothing of the fair country through which he passed. The train on which the body of Abraham Lincoln was riding bore him to his burial place at Springfield, Ill. It was a stately train, its yellow coaches bearing the black habiliments of mourning, and it had come a roundabout way from its start at Washington. There had been stops at Baltimore, Philadelphia, New York, Albany, Buffalo, Cleveland, Columbus, and Indianapolis. All had done honor to its passing.

The funeral train left Indian-

Historic structures on the Monon include the brick station buildings at Michigan City← and Gosport↓. These were built with large doors at each end to allow the loading of freight cars inside the station. A similar station is located at Orleans. Passenger train is New York Central's Mercury on the main Michigan Central route through Michigan City. A short mile north of the Gosport station is the junction with a branch line of the Pennsylvania which runs over the route once planned to take the Monon to Indianapolis.

Both pictures by Linn H. Westcott.

apolis just at midnight upon the rails of the Lafayette & Indianapolis Railroad. It passed slowly through the market square of Lafayette at 3:45 in the morning. Despite the early hour, the market place through which the railroad still passes was thronged with densely packed humanity. A band played a dirge and the small yellow cars, striped in bands of black showing clearly in the light of many bonfires, slowly passed through the square. The locomotive bore a picture of Lincoln upon its boiler head and it was preceded in its entire course by a pilot engine swathed in an American flag. The whole thing presented a picture that small boys and girls were to remember for years afterward and tell to their children and grandchildren.

Michigan City, small as it was, received the dead hero with no small distinction. In front of its handsome new passenger station a huge funeral arch had been erected, spanning the tracks of the two railroads and elaborately decorated with flags, evergreens, and mourning black. The train paused at Michigan City for breakfast. Some 400 people were served in front of the station.

War traffic and the Lincoln funeral train having become things of the past, the Louisville, New Albany & Chicago lapsed into a sad desuetude. The Lafayette & Indianapolis, having become an important link of the newly formed Big Four Railroad (afterward NYC), developed its own Chicago line by way of Kankakee and the Illinois Central. Robbed of its share of the through traffic, the northern half of the New Albany road fell to a pitiful state. Now also deprived of the strong protection of the MC, it all but died. Through traffic went to other rails and Michigan City as a junction point was nil.

"Indiana's own railroad" might easily have died then and there, had it not been for a succession of most fortuitous circumstances. In some way the Louisville, New Albany & Chicago managed to keep going through the decade of the '70's. It was in the middle of that decade that a little narrow-gauge road, only 40 miles long, was built across northern Indiana between Delphi and Rensselaer, crossing the LNA&C at Monon. There was little excuse for its existence and it soon failed. But though it was torn up its roadbed later became a link of a standard-gauge road from Indianapolis all the way through to Chicago.

Even before the inception of the narrow-gauge, the so-called Chicago & Indianapolis Air Line Railway Company, planning to build the shortest possible line from Indianapolis to Chicago, had been incorporated. In 1880 it came into action, absorbed the bankrupt narrow-gauge, and built a connecting link from Rensselaer to Dyer (just outside of Hammond). This part of the line was completed and opened to traffic in 1880. In 1881 the Air Line was consolidated with the LNA&C, which completed the railroad from Delphi to Indianapolis and from Dyer to Hammond. In 1884 entrance was gained into Chicago from Hammond over the Chicago & Western Indiana, a terminal line which owns the well-located Dearborn Station.

The branch to French Lick was begun as an independent railroad, the Orleans, West Baden & French Lick Springs Railway, and was purchased by the LNA&C before the branch was completed in 1886. The narrow-gauge Bedford & Bloomfield Railroad from Bedford to Switz City was acquired the same year; the gauge was later widened and the line extended by trackage rights on the IC to Linton. This branch continued in use until 1936, when it was abandoned. Also abandoned in 1936 was the branch from McCoysburg to Dinwiddie, the former Chicago & Wabash Valley Railroad. This was acquired in 1916 along with the Indiana Stone Railroad from Clear Creek to Harrodsburg, now part of the main line. Another addition was the Indianapolis & Louisville Railroad, which was leased shortly after completion in 1907 and later purchased.

Because the two main stems of the Louisville, New Albany & Chicago crossed at Monon, the road derived its highly popular name the Monon Route. Now, with feeders to Chicago and Indianapolis, it was in an excellent traffic position.

Things began to look much better for the Monon. It had valuable mail contracts between Louisville and Indianapolis and Chicago, and its *Hoosier* train out of Indianapolis up to Chicago each evening at 5 became a local institution of high popularity. That Indianapolis line, in connection with the Cincinnati, Hamilton & Dayton (now part of the Baltimore & Ohio system), ran three good trains, with through sleepers and parlor cars, daily between Cincinnati and Chicago. It all was a rather pretty picture.

Then came the panic year of 1893 and bad times. Panic years always have been bad years for Monon. This was no exception. The Louisville, New Albany & Chicago went into bankruptcy. It was reorganized and four years later it emerged as the Chicago, Indianapolis & Louisville, its present official title. The rival Louisville & Nashville and Southern railway systems bought a controlling interest in the new company. This gave them joint control of a route from their northern termini to Chicago. This did not work out very well—joint-ownership roads, especially when owned by sharp competitors, rarely do work out well.

In the four-party consolidation plan of the Transportation Act of 1920, the Monon was allotted to Baltimore & Ohio, which seemed to most folks a sensible arrangement. It did not seem sensible to the Monon management. Reflecting the thought of its railroad owners south of the Ohio, it protested bitterly, and finally the Interstate Commerce Commission ruled that Indiana's own railroad could continue independently. The four-party plan came to naught and the question remained academic.

But the panic of '29 came, and in 1933 the Chicago, Indianapolis & Louisville went into receivership for 13 rather desolate years. In May, 1946, a new order of things came to pass; the receiver was discharged, and the company reorganized. A new president was appointed. John W. Barriger did not have to kowtow to the presidents of L&N and Southern. As the Monon celebrates its 100th anniversary, it faces postwar traffic with an independent and invigorated force.

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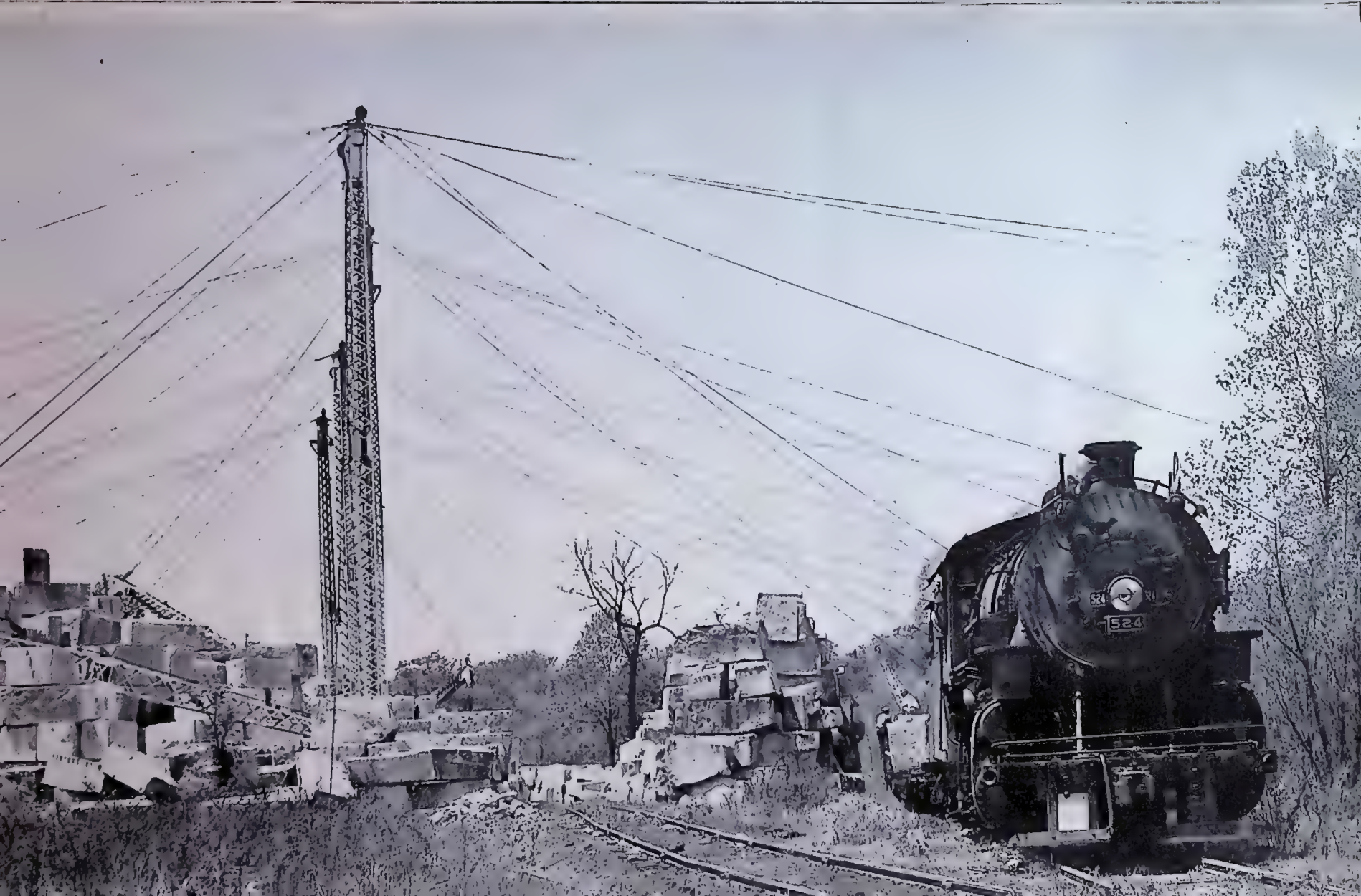
524

Stone Train on the Monon

Work extra 524 picks up some quarry-to-mill cars at a quarry near Bloomington. The huge limestone blocks are unloaded at mills at Bloomington and Bedford, where they are worked into building stone of various sizes and shapes and then reloaded into mainline freight cars for shipment to building sites all over the country. In their completed form the numbered chunks of stone are packed tightly into low-side gondolas with generous veneers of excelsior and powdered limestone as a cushion. Photo by J. F. Bennett.

HUNDREDS of different signs and signals guide the railroad man. Fixed signals tell the engineer to proceed, stop, or proceed with caution. Little 18 inch-high wooden posts mark quarter and half-miles; triangular concrete signs are mile posts. (The one in the picture tells trainmen, "Jersey City—80 Miles Ahead.")

Then there are speed limit signs, whistle posts, wayside signals—all reminders of what to do and how to run at any given point.

But we haven't begun to cover the sign language of the railroad. There are still whistle signals, a variety of signs for maintenance-of-way men, and many others.

The entire story is told in the Erie's new folder, "Sign Language." For your copy, fill out and mail the coupon below.

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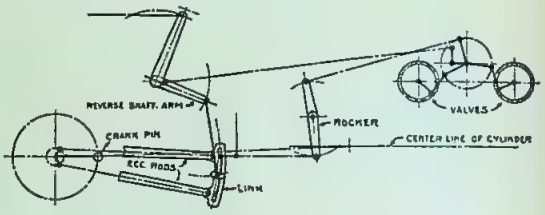
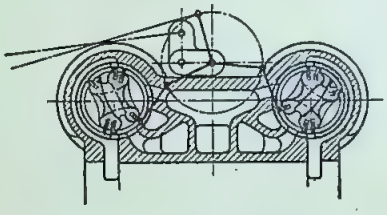
FRISCO

TRAINS collection.

Young Rotary Valves

The odd-looking valves in the photograph were the original valves on 10 C&NW Class D locomotives built by the Schenectady Locomotive Works in 1908. Provided with double admission and exhaust ports, these "Young rotary valves" claimed quicker admission, closing, and exhaust than piston valves or slide valves,





and offered less resistance to the valve motion, being completely balanced. However, they were more complicated and required special skill both in manufacture and adjustment, and these disadvantages outweighed the advantages. The North Western substituted piston valves on these locomotives, Nos. 390 to 399, between 1918 and 1924.

"Railroadingist" Town

Corning, O., on the Charleston-Toledo main line of the New York Central, is quite likely the "railroadingest" railroad town in the country. Not only are one fifth of its 1500 inhabitants railroad men, but the town's affairs are handled largely by railroaders. Murray R. Brown, mayor for 16 years, has been NYC storekeeper for 27 years. Clyde R. Thomas, chief yard clerk, has been with the railroad for 30 years and has served as village clerk for 15. Veteran village councilman Earl Wilson is wreckmaster. A signal maintenance man, Ralph E. Briggs, is on the board of public affairs. Guy Lamity, a fireman for more than 30 years, is on the council, as is J. R. Latta, who retired from the railroad after 49 years of service. And Dr. James Miller, who serves the villagers when they're sick, is also the railroad physician in Corning.

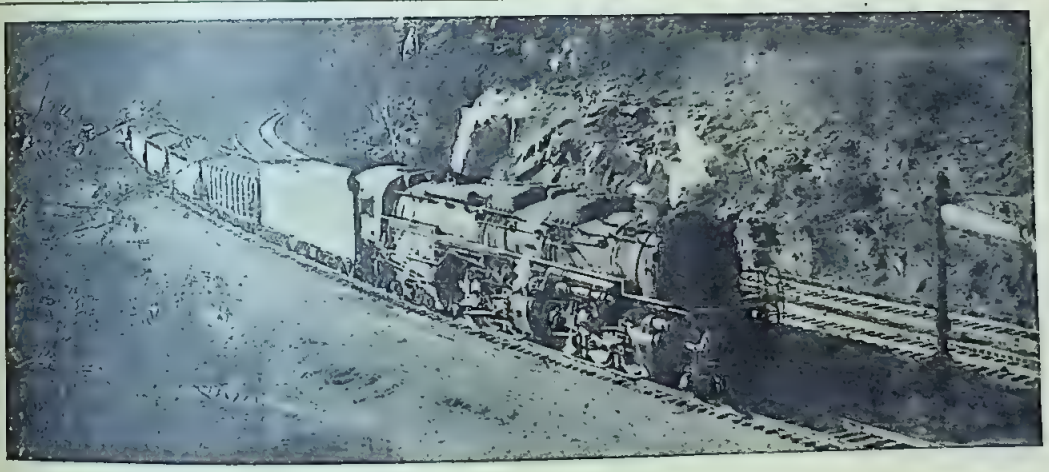
The Function of the A. A. R.

The severest critic of the Association of American Railroads, Robert R. Young, has conceded that the companies he controls, and which have withdrawn *pro forma* from the association, nevertheless need 83½ per cent of the service (excepting advertising and "public relations") which the A. A. R. provides for the railroad industry. That is to say, Young-controlled railroads continue to participate in all such little-publicized A. A. R. activities as car service, accounting, and the mechanical and control arrangements necessary for equipment interchange. A rating of 83½ per cent is well above the "passing" requirement in almost any kind of examination; and when such an evaluation is conceded by so critical an examiner as Mr. Young, it is a mark of which the recipient is entitled to take pride.

The faults and failures of the A. A. R., actual or merely alleged, have been widely proclaimed. The organization is often misrepresented (as, for instance, by the frequent assertion of leftist politicians that the entire A. A. R. budget represents railroad expenditure for "propaganda and lobbying"). Its sound accomplishments are little known. Very few of the public, for example, aside from professional traffic men, realize that the railroads could not interchange cars and act as a single continental system of transportation without the services of the Association of American Railroads. How many Americans know that the railroads were able to handle in the recent war an increase of 98 per cent in freight traffic over the prewar level, as compared to only 12 per cent in World War I; and that this tremendously improved performance was due almost entirely to a very effective system of carrier-shipper co-operation which was elaborated in the interwar years by the car service division of the A. A. R.? — *Railway Age.*

Smoking in the Outer Lobby Only

One of the most disagreeable tasks a trainman has to perform is to remind an offending passenger that smoking is a pleasure which should be enjoyed in the proper place. A 6½-foot *Empire State Express* Negro porter solves the problem by audibly blowing his breath (à la Raleigh "903" radio advertising) on the stainless steel wording "No Smoking" on the coach bulkheads. Then, energetically polishing the already-gleaming letters with his sleeve, he stands off and remarks proudly — and loudly — "M-m-m — m-m-m! Don't them letters shine!" But not all coaches are so embellished, and even if they were, few trainmen would be able to reach the signs with their sleeves. The Chicago & North Western furnishes its trainmen with neatly printed cards reading "To avoid the possibility of discomfort to your fellow passengers, we will appreciate your co-operation by confining your smoking to the smokers' lounge or car. Thank you. Chicago & North Western Railway System." Thus the management, not the trainman, makes the request. The cards save crew members a lot of embarrassment and somehow leave a better impression with the passenger than a spoken request.



traffic demands must be anticipated

Because equipment cannot be built "overnight," traffic demands must be anticipated for long periods in advance. So, versatile motive power is especially important — locomotives capable of speeding passenger traffic or handling heavy freights with equal facility and economy of operation.

Lima-built modern steam locomotives meet these requirements and provide the superior performance that results from Lima's insistence upon the highest standards of design, workmanship, and material.

LIMA LOCOMOTIVE WORKS LIMA LOCOMOTIVE WORKS INCORPORATED **INCORPORATED, LIMA, OHIO**

RUNNING EXTRA

Since the latter part of May, Robert B. Adams has been business manager of TRAINS and THE MODEL RAILROADER. Actually, he's been working for the company much longer than that. His work for TRAINS began on that August day in 1946 when he wrote to the editor: "Now that I have sufficiently annoyed Frank Taylor with a few of my thoughts on model railroading and THE MODEL RAILROADER, I shall turn my attention to you and TRAINS and see how well I can succeed in demoralizing your department."

After that, Bob kept a constant stream of brickbats and bouquets flowing between his home in East Orange, N. J., and our offices in Milwaukee. Many of his suggestions were acted upon, and that's why we say he's been working for us longer than his payroll record indicates.

One thing about Bob that impressed us was his ability to take it as well as dish it out. Soon after the initial correspondence he sent us an article entitled, "Two for Tweetsie." We bounced it back. He rewrote it. We sent it back. He rewrote it again. We sent it back again. Finally, it clicked. You'll be seeing it some month in TRAINS.

Along about this time the company found itself in need of a business manager, and as our correspondence with Bob had elicited the fact that he was well suited for the position, he was "it."

Bob is a graduate (1935) of the Pace Institute, New York, in accountancy and business administration. He has worked with IBM and Crucible Steel, and was assistant comptroller and office manager of a rug company in the East. He's a railfan and a model railroader, and during a vacation while attending school he picked up some experience as a printer's helper. All this gives him an admirable background for his duties with us: the supervision of accounting and statistics, order-handling and billing, circulation, and shipping. Unofficially, we'll wager, he will continue to be one of the editors' severest critics.

Railroad

Some Train Numbers Are Odd

"Eastbound, Westbound" on page 64, May TRAINS, brings to mind an interesting example of train numbering on two railroads serving New York. The New Haven, which runs both northerly and easterly, naturally numbers its trains in accordance with the standard practice of odd numbers south and west, even numbers north and east. The NYC, which is a generally east-west railroad, numbers its northbound trains on the Hudson and Harlem with odd numbers to avoid a four-directional mixup. Thus, a New Yorker can leave Grand Central on an odd-numbered NYC train (such as Harlem Division No. 5) and journey to Pittsfield, Mass. Then he can turn around and leave from the same station on an odd-numbered New Haven train, such as 143. Or, if he has an aversion to odd numbers, he can leave New York on the New Haven and return on the Central. Both railroads use the same stations at both terminals.

Bernard B. Strauss, 1749 Grand Concourse, Bronx 53, N. Y.

A Ride for a Railfan

On a recent trip to St. Louis, I took the B&O *National Limited*. It was a very delightful, comfortable trip, with perfect service and food. We pulled into St. Louis right on the dot. Just to be different, I returned East on the Nickel Plate via Cleveland and Buffalo, thence Lackawanna. The NKP from St. Louis to Cleveland is some train! We pulled out of Union Station at 5:40 p.m. with 4-6-0 No. 154, two baggage cars, two coaches, and an eight-section diner-lounge-observation Pullman *(Kitchi Gammi Club)*. There was *one* other passenger on this Pullman. Just like riding in a private car. We ordered supper in our lounge chairs, and the porter-waiter-bartender-ticket collector announced "Dinner is served, gentlem'n" when the cook had everything ready. Incidentally, I had one of the best steak dinners I've ever eaten, slept perfectly, had a swell breakfast, and pulled into Cleveland on time at 8:40 the next morning. We had three different locos, two Ten-Wheelers, and a Pacific into Cleveland. There is a ride for a railfan!

Howard L. Fogg Jr., Cross Ave., Basking Ridge, N. J.

RAILROAD MAN OF THE MONTH

Vernon Hinkle, New York Central conductor for 44 years, likes his work so well that for the past 27 years he has gone out of his way to create more of it. Together with his wife he conducts "Mr. and Mrs. Vernon Hinkle Travel Parties" from his home in Indianapolis, Ind., where he ties up between runs on the Central's crack *Southwestern Limited* from Indianapolis to St. Louis and return.

Hinkle Travel Parties had their beginning in 1920, when special trains were arranged for the Fort Worth (Tex.) Auto Dealers' Association and Chamber of Commerce, and for the Indiana Democrat Club, the latter train running through to San Francisco. Since then Hinkle and his wife have arranged scores of trips by special train. Climax of their career came last December, when they conducted a two-week, 6500-mile trip from Indianapolis to San Francisco and other western cities for the Indiana Farm Bureau. Nearly 1100 farmers occupied the four special trains. Eighty-one out of every 100 were more than 50 years old. It took numerous cabs and buses and eight hotels to ac-

Mail

125 Miles Between Drinks

I rode the new B&O *Cincinnatian* to Washington; it is the finest coach train I've been on yet. No-likker-by-the-drink in West Virginia cramps the style of the lounge car a bit. Six intrepid individuals were trying to make a highball last from the Ohio River to the Maryland border, but did not quite succeed.

Frederick A. Exline, 22 E. Gay St., Columbus 15, O.

Another Old Ticket

Even older than the 48-year-old ticket which was honored by a New Haven conductor [page 65, May TRAINS] is one held by Conductor O. L. Beagle of the Burlington Route, St. Joseph Division. This ticket was issued at Jeffersonville, Ind., March 6, 1891, by the Ohio & Mississippi Railway, reading Jeffersonville to Charlestown. It was never used.

J. D. Calhoun, 2934 Seneca St., St. Joseph 38, Mo.

[Although Mr. Beagle's ticket carries no time limit, it is doubtful if it could be honored by the Baltimore & Ohio, which now operates the old Ohio & Mississippi Railway. Charlestown still has passenger service, but Jeffersonville has freight service only. — *Ed.*]

How to Take Water

There seems to be a difference of opinion anent the method used by freight trains when taking water. In a recent issue of TRAINS, G. W. O'Connor states that the "cut off, take water, back on, highball" system is correct. Then along comes J. E. Atwood [Railroad Mail, May], who says that on the Boston & Maine water is taken without detaching locomotives from 100-car freights. It would seem that Mr. O'Connor's system is more logical; however, railroads hereabouts use Mr. Atwood's method. I have seen 100-car Reading freights pull up to the water plug without detaching the engine. Usually the engineman eases up on the plug but with a heavy train doesn't get stopped until he is past it. He then eases back into position, taking slack for his start while doing so. Freights on the Pennsylvania do not detach engines to take water either.

Bert Pennypacker, Box 341, Coatesville, Pa.

. . . You will find that the man who cuts off will beat the other's time.

Engineer Arthur P. Nadeau, 343 E. Michigan St., Marquette, Mich.

Conductor Vernon Hinkle
. . . likable, kindly, alert

commodate the group while in San Francisco. Yet not one injury resulted in the 7,150,000 passenger-miles of travel.

Hinkle conducts the special train tours himself, taking time off from his Central job, which keeps him occupied five days a week otherwise. On last December's all-Pullman tour he enlisted the aid of his wife, his assistant Central conductor, and his banker son to watch over three of the four special trains while he conducted the other and supervised all four. In explaining why he selected these particular people to aid him he unconsciously sums up the reasons for his success on the New York Central as well as in his own venture: "I selected them because of their personality, their kindness, and their willingness to be constantly on the alert to see that the 1100 people, many past 70 years of age, were always made comfortable and happy."

SECOND SECTION

What is your definition of a diesel locomotive? Is it a diesel locomotive with an electrical transmission, or is it an electric locomotive with its own power plant? A couple of TRAINS editors had quite a discussion about this the other day, but the only thing they settled was this: Practically all diesel locomotives use electric transmission, so there is no good reason why they should be referred to as "diesel-electrics." This is understood. So TRAINS will drop the hyphenated name and use only "diesel" in the future. And while we're about it, we shall also stop capitalizing "diesel." Rudolf Diesel no longer makes them; he's dead. The name has become a common noun, and as a common noun we'll spell it—with a lower case d.

* * *

Have you noticed that TRAINS is now arriving on time? Three shifts in the pressroom are responsible for this. For a while it was impossible to hire enough good pressmen to work around the clock, but now we have them, and our three magazine presses stop only for repairs and changing of forms.

* * *

Our "Railroad Mail" department represents many more letters than the ones which are printed. We use the word "represents" advisedly, for many of the letters are typical of others which are received, read with interest and then left out of the magazine for lack of space. The Diesel vs. Steam comments, for instance, are only a small fraction of the letters received on this subject. Letters which point out errors in some previous article almost always represent a sizeable group of eagle-eyed readers. Such corrections, incidentally, are immediately checked for accuracy, and if it is found the article was indeed in error, notations are made in a "correction copy" of the magazine and filed as a precaution against making the same mistake again some time in the future. And when it comes time to make up the annual index, every effort is made to refer to the correction so that users of the index will see it.

* * *

We like to get letters from readers and we invite you to send some. One thing we ask is that you keep them as short as possible. And if we don't use your letter after you go to the trouble of writing it, please don't be dismayed. Our judgment may be in error sometimes, but we try to print the most interesting and the most representative letters of the month. Your own personal railroad experiences, praise or criticism of Trains material, and your ideas on railroading are always welcome.

KALMBACH PUBLISHING CO.

1027 N. 7th St. Milwaukee 3, Wis.

B&M Attacks Air Subsidies

"You've been working on the runway," states an advertisement of the Boston & Maine addressed to the taxpayers of the nation. "When a new baby arrives," the advertisement continues, "the neighbors, doing

You've been working on the Runway

From B&M advertisement.

what comes naturally, gather 'round and wish him well. Through childhood and adolescence, gifts are showered on him from poppa and momma and Aunt Minnie and Uncle Sam. But when baby reaches maturity, has an established business of his own with a yearly stipend rivaling the old man's and he still wants his momma and poppa and Uncle Sam to keep on buying him things and paying his taxes on his place of business, perhaps someone ought to gently suggest 'It's time you paid your own way.'" Identifying the "baby" as the commercial air lines and pointing out that tax money has been and is still being poured into airports for the principal benefit of commercial air lines, the advertisement concludes, "The present policy of subsidizing air lines tends to weaken the railroads and is harmful to our country's economic structure. The war proved beyond all doubt that weakening the railroads is most dangerous to our national safety."

Oldest Active Railroad Man

Eighty-four-year-old Julius L. Marquette, conductor of the Alton Railroad's *General Pershing* streamliner, says he is the oldest active road serviceman in the United States. He has worked for the Alton for 62 years, and before he went to the Alton in 1885 as a freight brakeman he had spent five years in the same service on the Chicago & North Western, running between Baraboo and Winona, Wis. In those days the locomotives were wood-burners and couplers were of the link-and-pin variety. Not all of Marquette's years with the Alton have been spent in road service, however. From 1916 to 1930 he was division superintendent in charge of operations between Bloomington, Ill., and Kansas City, Mo. He has no thought of retiring, he says.

Marquette's long service recalls that of "Soda Ash" John M. Horan, who was with the Milwaukee Road almost 83 years. He was still in service when he died in 1938, one week after his 100th birthday. He started with the railroad in 1855, loading wood onto locomotive tenders. His career included positions as machinist, engineer, and traveling inspector, and at the time of his death he was boiler washer inspector. He had shaken hands with every chief executive of the Milwaukee Road, from the first, Byron Kilbourn, to H. A. Scandrett, who retired May 13. Horan was nicknamed "Soda Ash Johnny" by fellow workers because he originated the use of soda ash in the treatment of water in locomotive boilers.

Rail Transport in Vermont

THE ROLE OF TRANSPORTATION IN THE DEVELOPMENT OF VERMONT, by William J. Wilgus; maps by Earle Williams Newton and the author. 104 pages, 8½" x 11". Published by the Vermont Historical Society, Montpelier, Vt. $3 to members; $4.50 to others.

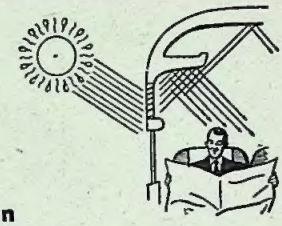
The history of the United States is inextricably interwoven with the development of its transportation, and this is perhaps more true of Vermont than of any other state. To this beautiful, roughhewn land of narrow valleys and little rivers, shut in by mountain ranges, poor in raw materials and without direct access to the outside world by sea, came the first locomotive in 1848; and from that point on, the railroads played a crucial part in the state's economy. They put Vermont in the strategic position she now occupies in the thoroughfares of transportation between New York, New England, Canada, and the West, and helped her to dispose of the products that otherwise could not have been exported — heavy products like granite, copper, asbestos, limestone, talc, and iron ore. This is not a book for easy reading, but the excellent maps, especially the one folded into a pocket in the back of the book, make the growth of the state's railroads, waterways, and industries more easily followed and visualized, and there are passages that would do justice to a novel's description of the fabulous beauty of the Green Mountain State. — *Merle Montague.*

Sierra Railroad in Movie

The entire 57-mile Sierra Railroad, which runs between Tuolumne and Oakdale, Calif., was taken over by the Selznick Studio for the filming of one sequence in the technicolor picture "Duel in the Sun." In order to conform to the 1880 period of the story, the picture crew moved 10 miles of multiple-strand telephone wire paralleling the tracks and replaced it with one strand such as was used in that era. The locomotive is purportedly the *President Cleveland*, built by Baldwin in 1871. Publicity photos show some anachronisms: electric light bulb in the headlight, a generator behind the steam dome, automatic couplers, marker brackets, and the builder's number 23790. Baldwin built No. 5000 in 1880.

ANOTHER "FIRST" FOR AMERICAN CAR AND FOUNDRY . . . ANOTHER "FIRST" FOR THE CENTRAL OF GEORGIA RAILWAY

The Secret of the "Sunliner"



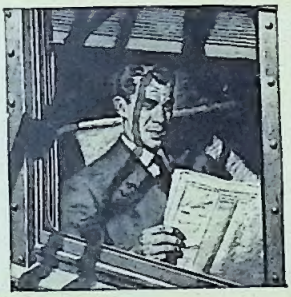
Read how a wonderful new window, with a "Venetian blind" built into the glass, works miracles on the "Sunliner"—revolutionary American Car and Foundry coach built for the Central of Georgia Railway.

This sketch explains the principle of deflected light. Outside light strikes deflector vanes placed within the window glass itself, is thrown upward. Striking the baggage rack and ceiling, the light is again deflected and diffused through the car.

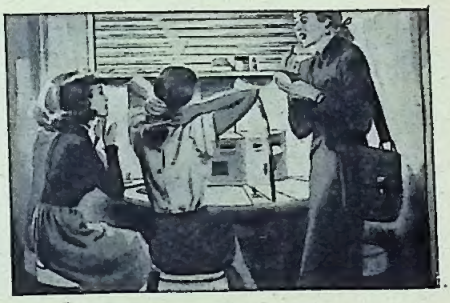
No sun glare . . . you get even, balanced *indirect* light at all hours of the day—no matter on which side of the coach you sit.

The head-high fluorescent lighting—*also* with deflecting system built into it—gives the same balance of light as in daytime.

LATE-HOUR TRAVELERS can doze without pin-point lights to disturb them. Even the night-lighting of the "Sunliner" is indirect and restful!



NO EYE-SHOCK from rapidly-alternating light and shadow. Draw your drape—and you *still* get full, shadowless light!



AND ESPECIALLY FOR THE LADIES . . . Wash basins are cleverly combined with vanity dressers in spacious lounges. ACF design does this *even while providing more passenger seats in standard cars!*

Look for this hallmark of superior equipment that means the latest in railroad service and the most in travel values.

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"Quality and Vision in Railroad Transportation"

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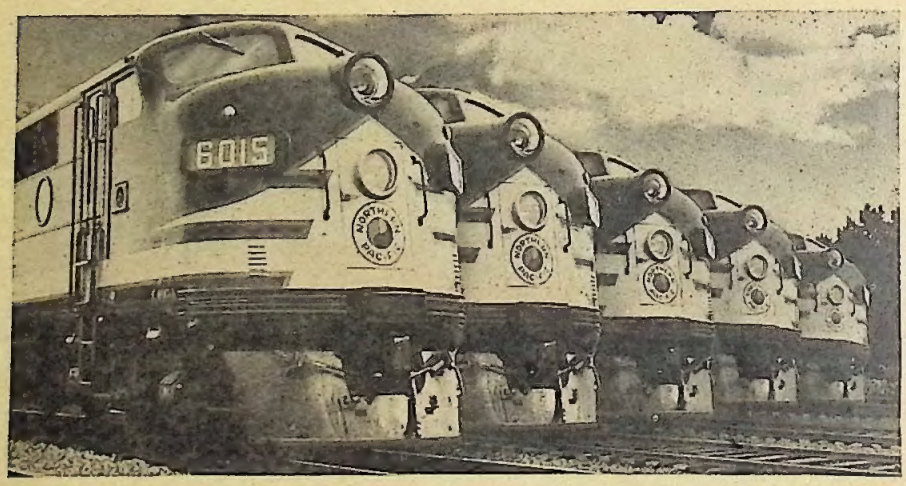
IS THE HORSE HERE TO STAY?

Ask any dude at a western ranch. He'll tell you the horse is just about the greatest invention of all time! He takes you where cars can't go—down an old buffalo trail . . . to an unfished fishing stream . . . to try your luck at panning gold. And the best way to get to the horse is the North Coast Limited. Serving *more* dude ranches than any other railroad, Northern Pacific can take you to one that fits *your* ideas of fun . . . and price. And speaking of horses . . .



Here's the latest in horsepower! These five new Northern Pacific freight diesels pack 30,000 H. P. under their hoods. They're 200-footers—with ample muscle to hustle mile-long loads at express speeds, or scale mile-high mountains. Working with them on the Main Street of the Northwest are sleek new N. P. passenger diesels, pulling the North Coast Limited. Main Street keeps making news—*big* news to people of the 7 states we serve, to others who visit or do business with the West.

For vacation information, write E. E. Nelson, 126 Northern Pacific Bldg., St. Paul 1, Minn.

NORTHERN PACIFIC
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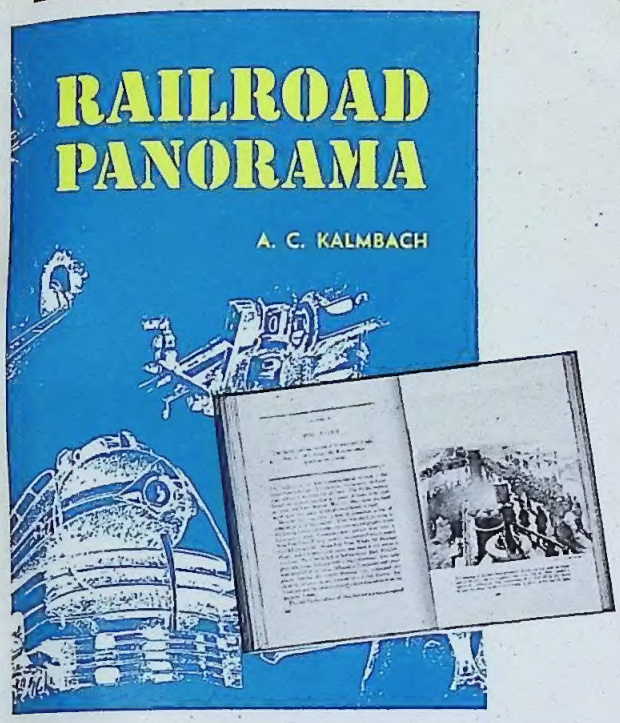
MAIN STREET
OF THE NORTHWEST

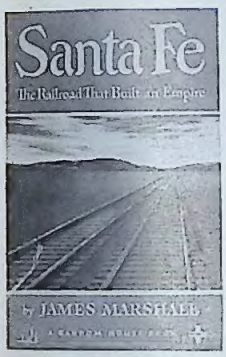
RAILROAD BOOKS *for Pleasant Summer Reading*



Whether settling down "under the shade of the old apple tree" or in a comfortable armchair in the evening, all railfans and railroad men will find the books listed on this page provide welcome relaxation and interesting reading. The coupon below is for your convenience in ordering . . . send it along today!

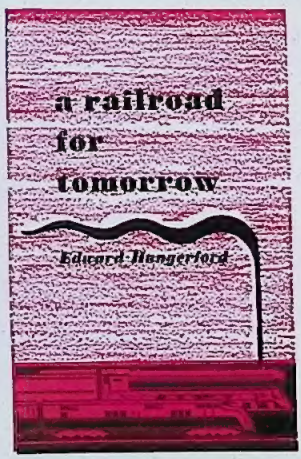
RAILROAD PANORAMA

Locomotives, trains, electric interurban lines, stations, and historical background are combined into this book, not as a railroad history, but rather as a record of the enthusiasm of the author, A. C. Kalmbach, editor of TRAINS magazine. The intriguing word pictures of action and railroad strategy include chapters on Grand Central Terminal, Horseshoe Curve, World's Fastest Railroad Run, Milwaukee Road Electrification, The Toughest Railroad Construction, Locomotive Personalities, and many others. 224 pages, plus 32 pages of photos. ----------$2.75



SANTA FE

The Railroad That Built an Empire. James Marshall tells how and by whom the road was founded, follows its expansion across the southwest, and includes tales of the Royal Gorge War, the Harvey organization, the wartime performance of the road, and the technical wonders of the modern system. 348 pages. ----------$3.75



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Edward Hungerford relates a sweeping story of a great railroad from the time it was chartered to the present day. It is a fascinating story of locomotives, trains, bridges, stations . . . but most of all, a story of the men who built the road, those who mismanaged it, and those who remanned and rebuilt it to its present-day importance in eastern transportation. 346 pages with numerous photos and woodcuts. ----------$3.75

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Here is a quaint little book of early American railroad information that will bring hours of enjoymen to the reader. Reproduced from the original "Guid of 1851," this facsimile includes the timetables, dis tances, and fares of all U. S. railroads at that time complete with map. 160 pages, only ----------$1.0

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